Note remarks

Test sheet : DAF

Edition : 01.03.93 Replaces : 03.92 Test oil : ISO-4113

Combination no. : 0 402 646 972

Injection pump

Pump designation : PE6P12OA32ORS7218 EP type number : 0 412 626 839

Governor

Governor design. : RQV275...1000PA939-2

Governer no. : 0 421 813 986

Customer-spec. information : DAF Customer

Engine : WS 268 L

1st version kw : 263.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflrw valve

: 1 417 413 025

Inlat press., bar: 1.50

Overflow

quantity min. 1/h: 95...115

Test nozzle holder

assembly : 1 688 901 105

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter

x Wall thickness

: 8.00x2.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 5.30...5.40 : (5.25...5.45)

Rack travel in mm : 14.00...15.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10 & maximum rack tra: 14.5...15.5 Difference ° CS : 2.25...3.75

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 14.80...14.90

Del.guantity cm3/: 23.0...23.2

100 s: (22.7...23.5)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 275.0 Rack travel in mm: 6.1...6.3

Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1045

: 7.70...8.20 travel mm

2nd speed rpm : 275

: 1.10...1.60 travel mm

rpm : 380 3rd speed

: 2.40...2.90 travel mm

4th speed rpm : 675

: 4.20...4.70

travel mm

5th speed : 1310 rpm

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION Control-lever position Degree: -1

rpm : 1125 Speed

Rack travel in mm: 13.60.4.16.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850 Aneroid pressure h: 1000

Del.quantity : 250.0...235.0)

cm3 : 5.00 1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 116...124

Testing:

1st rack travel in: 13.80

rpm : 1040...1050 Speed

2nd rack travel in: 4.00

rpm : 1150...1180 Speed

4th rack travel in: 1250

Speed rpm : 0.00...1.40

LOW IDLE 1 Control lever

position degrees: 78...86

Testing:

Speed : 175 rpm Minimum rack trave: 7.50 rpm : 275

Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

Speed rpm : 300...350

Aneroid/Altitude Compensator Test

1st version

Setting

: 600 Speed rpm Pressure hPa : 1000

: 14.80...14.90 Rack travel mm

Measurement

Speed $1/\min : 600$

1st pressure hPa : -

Rack travel in m: 12.20...12.40

2nd pressure hPa : 490

Rack travel in m: 14.20...14.30

3rd pressure hPa : 280

Rack travel in m: 12.80...13.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 600 Speed

Del.quantity cm3/: 158.0...160.0

1000 s: (155.0...163.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.80

rpm : 1040...1050 Speed

LOW IDLE

Speed rpm : 275

Rack travel in mm : 4.90...5.10

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

Note remarks

Test sheet

: DAF

Edition

; 26.02.93

Replaces

: 03.92

Test oil

: ISO-4113

Combination no. : 0 402 646 973

Injection pump

Pump designation : PE6P120A320RS7218Z

EP type number

: 0 412 626 847

Governor

Governor design: RQ275/1000PA936-2

Governer no.

: 0 421 801 633

Customer-spec. information Customer

: DAF

Engine

: WS 242 L

1st version kW

: 268.0

Rated speed

: 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly

: 1 688 901 105

Opening

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,8

Test lines

: 1 680 750 089

Outside diameter

x Wall thickness

x Length mm

: 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 5.30...5.40

: (5.25...5.45)

Rack travel in mm : 14.00...15.00

Firing order : 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

betw. rack trav. m: 4.90...5.10

BEGINNING OF DELIVERY DIFFERENCE

& maximum rack tra: 13.5...14.5

Difference ° CS : 2.20...3.75

BASIC SETTING

1st speed

rpm: 850

Rack travel in mm : 13.80...13.90

Del.quantity cm3/: 20.5...20.7

100 s: (20.2...21.0)

Spread

cm3 : 0.5

100 s: (0.9)

rpm : 275.0

Rack travel in mm: 6.0...6.2 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3) cm3 : 0.8

Spread

2nd speed

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

Speed

rpm : 550

Rack travel in mm: 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 850

Aneroid pressure h: 1000

Del.quantity : 200.0...210.0)

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm Rack travel in mm: 16.0

Testing:

1st rack travel in: 12.80

rpm : 1035...1050 Speed

2nd rack travel in: 4.00

Speed rpm : 1120...1150

4th rack travel in: 1250

Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring

rpm : 275 Rack travel in mm: 5.0

Testing:

Speed rpm : 175

Minimum rack trave: 6.50 Speed rpm : 275

Rack travel in mm : 4.90...5.10

Rack travel in mm : 2.00

Speed : 330...370 rom

TORQUE CONTROL

Dimension a mm : -

Torque control curve - 1st version

1st speed rpm : 850

Rack travel in m: 14.80...14.90 2nd speed rpm : 1000

Rack travel in m: 14.70...14.90

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 600 Pressure hPa : 1000

Rack travel mm : 13.80...13.90

Measurement

Speed $1/\min : 600$

1st pressure hPa : -

Rack travel in m: 11.70...11.90

2nd pressure hPa : 420

Rack travel in m: 13.30...13.40

3rd pressure hPa : 260

Rack travel in m: 12.20...12.40

FUEL DELIVERY CHARACTERISTICS

1st version

A04

Aneroid pressure h: -

rpm : 600 Speed

Del.quantity cm3/: 147.0...149.0 1000 s: (144.0...152.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.80

Speed rpm : 1035...1050

LOW IDLE

Speed rpm : 275

Rack travel in mm : 4.90...5.10

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS BEGINNING OF DELIVERY Test pressure, bar: 25...27 Note remarks Prestroke mm : 5.30...5.40 : (5.25...5.45) Test sheet : DAF Rack travel in mm : 14.00...15.00 Firing order : 1-5-3-6-2-4 : 01.03.93 Edition : 03.92 Replaces Test oil : ISO-4113 Combination no. : 0 402 646 974 Phasing : 0-60-120-180-240-300 Injection pump Pump designation: PE6P12OA32ORS7218 Tolerance $+ - ^{\circ} : 0.50 (0.75)$ EP type number : 0 412 626 839 Governor Time to cyl. no. : 1 Governor design. : RQ275/1000PA936-2 Governer no. : 0 421 801 633 BEGINNING OF DELIVERY DIFFERENCE Customer-spec. information betw. rack trav. m: 4.90...5.10 & maximum rack tra: 14.5...15.5 Difference ° CS : 2.25...3.75 Customer : DAF Engine : WS 268 L BASIC SETTING 1st version kW : 268.0 : 2000 Rated speed 1st speed rpm: 850 TEST BENCH REQUIREMENTS Rack travel in mm : 14.80...14.90 Test oil Del.quantity cm3/: 23.0...23.2 inlet temp. °C : 38...42 100 s: (22.7...23.5) Overflow valve : 1 417 413 025 cm3 : 0.5Spread Inlet press., bar: 1.50 100 s: (0.9) Overflow rpm : 275.02nd speed quantity min. 1/h: 95...115 Rack travel in mm: 6.1...6.3 Del.quantity cm3/: 1.4...2.0 Test nozzle holder 100 s: (1.1...2.3) assembly : 1 688 901 105 cm3 : 0.8 Spread 100 s: (1.2) Opening pressure, bar : 207...210 GUIDE SLEEVE POSITION Control-lever position Orifice plate Degree: -1 Speed rpm : 550 Rack travel in mm : 15.60...16.40 diameter mm : 0.8 Test lines : 1 680 750 089 FULL LOAD DELIV. AT FULL LOAD STOP Outside diameter 1st version x Wall thickness Speed rpm : 850 Aneroid pressure h: 1000 Del.quantity : 230.0...232.0 1000 : (227.0...235.0) x Length mm : 8.00x2.50x600 (A) Injection pump setting values Insp. values in parentheses Spread cm3 : 5.00Set equal delivery quant. 1000 : (9.00)

RATED SPEED

per values

1st version

Setting point:

Speed : 550 rom Rack travel in mm: 16.0

Testing:

1st rack travel in: 13.80

Speed rpm : 1035...1050 2nd rack travel in: 4.00

rpm : 1140...1170 Speed

4th rack travel in: 1250

Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 275 Rack travel in mm: 5.0

Testing:

Speed : 175 rpm

Minimum rack trave: 6.50

rpm : 275

Rack travel in mm : 4.90...5.10

Rack travel in mm: 2.00

Speed rpm : 330...370

TORQUE CONTROL

Dimension a mm : -

Torque control curve - 1st version

1st speed rpm : 850

Rack travel in m: 15.30...15.40

2nd speed rpm : 1000

Rack travel in m: 15.20...15.40

Aneroid/Altitude

Compensator Test

1st version

Setting

: 600 Speed rpm Pressure hPa : 1000

: 14.80...14.90 Rack travel mm

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 12.20...12.40

2nd pressure hPa : 490

Rack travel in m: 14.20...14.30 3rd pressure hPa : 280

Rack travel in m: 12.80...13.00

FUEL DELIVERY CHARACTERISTICS

1st version

A06

Aneroid pressure h: -

Speed rpm : 600 Del.quantity cm3/ : 158.0...160.0 1000 s: (155.0...163.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.80

rpm : 1035...1050 Speed

LOW IDLE

rpm : 275 Speed

Rack travel in mm : 4.90...5.10

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

Note remarks

Test sheet

: SCA

Edition

: 15.06.93

Replaces

Test oil

; ISO-4113

Combination no. : 0 402 646 995

Injection pump

Pump designation : PE6P12OA72ORS7188

EP type number : 0 412 626 832

Governor

Governor design. : RQV200...950PA725-10

Governer no. : 0 421 814 002

Customer-spec, information Customer

: SCANIA

Engine

: DSC 11 33

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 2.50

Test nozzle holder

: 1 688 901 104 assembly

Opening.

pressure, bar

: 250...253

Orifice plate

diameter mm

: 0,7

Test Lines

: 1 680 750 008

Outside diameter

x Wall thickness

x Length mm

: 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 4.40...4.50

: (4.35...4.55)

Rack travel in mm : 9.00...12.00

Firing order

: 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 700

Rack travel in mm : 13.40...13.50

Del.quantity cm3/: 23.8...24.0

100 s: (23.5...24.3)

cm2 : 0.8

100 s: (1.2)

rpm : 250.0 2nd speed

Rack travel in mm: 4.6...5.0

Del.guantity cm3/: 1.3...1.9

Spread

Spread

100 s: (1.0...2.2) cm3 : 0.4

100 s: (0.8)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 225

: 1.20...1.60 travel mm

2nd speed rpm : 350

: 2.40...3.00 travel mm

3rd speed rpm : 650

travel mm : 4.50...5.10

4th speed rpm : 1045

: 8.40...8.60 travel mm rpm : 1125

5th speed

: 9.30...9.70 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1150

Speed

Rack travel in mm : 7.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 700

Aneroid pressure h: 1500

Del.quantity : 238.0...240.0 1000 : (235.0...243.0)

A07

Spread

cm3 : 8.00

1000 : (12.00)

RATED SPEED

1st version

Control lever

position degrees: 110...118

Testina:

1st rack travel in: 12.40

rpm : 990...1000 Speed

2nd rack travel in: 4.00

rpm : 1110...1140 Speed

4th rack travel in: 1250

Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever

position degrees: 60...68

Testina:

Speed : 125 rpm

Minimum rack trave: 6.20

Speed rpm : 250

Rack travel in mm : 4.60...4.80

Rack travel in mm : 2.00

Speed rpm : 370...430

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 man

hPa : 1500 Pressure

Rack travel mm : 13.40...13.50

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.20...10.60

2nd pressure hPa : 440

Rack travel in m: 12.00...12.10

3rd pressure hPa : 270
Rack travel in m: 10.90...11.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500

Speed rpm : 950

Del.quantity cm3/: 218.0...226.0 1000 s: (216.0...228.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 151.0...155.0 1000 s: (149.0...157.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.40

rpm : 990...1000 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 145.0...185.0

1000 s: (141.0...189.0)

Rack travel in mm: 10.20...10.60

LOW TDLE

Speed rpm : 250

Rack travel in mm : 4.60...4.80

Remarks:

Delivery—valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders

to 2.9...3.1 mm.

Start-of-delivery setting with ROBO

diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1-2-7-3-4-5-Note remarks Test sheet : SCA 14,0 h1 Edition : 21.06.93 Phasina : 0-45-90-135-180-225-: 07.02.89 Replaces 270-315 Test oil : ISO-4113 Tolerance + - ° : 0.50 (0.75) Combination no. : 0 402 648 836 Time to cyl. no. : 1 Injection pump BASIC SETTING Pump designation : PE8P120A920/4LS7125T EP type number : 0 412 628 824 1st speed rpm: 700 Governor Governor design. : RQV200...950PA736-4 Rack travel in mm : 13.80...13.90 Governer no. : D 421 813 646 Del.quantity cm3/: 22.1...22.3 Customer-spec. information Customer : SAAB-SCANIA 100 s: (21.8...22.6) Engine : DSC14 03 L09,L10 cm3 : 0.6Spread TEST BENCH REQUIREMENTS 100 s: (0.9) Test oil 2nd speed rpm : 225.0 inlet temp. °C Rack travel in mm: 4.9...5.3 : 38...42 Del.quantity cm3/: 1.6...2.0 Overflow valve 100 s: (-) : 1 417 413 025 cm3 : 0.3Spread 100 s: (0.6) Inlet press., bar: 1.50 (B) Setting of injection pump Test nozzle holder with governor : 1 688 901 019 assembly GUIDE SLEEVE TRAVEL Openina 1st speed rpm : 225 : 207...210 pressure, bar travel mm : 1.20...1.60 2nd speed rpm : 350Orifice plate travel mm : 2.30...2.90 diameter mm : 0.8 3rd speed : 650 rpm travel mm : 4.40...5.00 : 995 4th speed rpm Test Lines : 1 680 750 015 travel mm : 7.70...7.90 rpm : 1125 5th speed Outside diameter : 9.30...9.70 travel mm x Wall thickness : 6.00x1.50x600 x Length mm GUIDE SLEEVE POSITION Control-lever position (A) Injection pump setting values Degree: -1 Insp. values in parentheses rpm : 1040 Speed Set equal delivery quant. Rack travel in mm : 15.20...17.80 per values FULL LOAD DELIV. AT FULL LOAD STOP BEGINNING OF DELIVERY Test pressure, bar: 25...27 1st version Speed rpm : 700 Prestroke mm : 5.00...5.10 Aneroid pressure h: 900 : (4.95...5.15) Del.quantity : 221.0...223.0 1000 : (218.0...226.0) Rack travel in mm : 9.00...12.00

AD9

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 56...64

Testing:

1st rack travel in: 12.80 rpm : 990...1000 Speed

2nd rack travel in: 4.00

rpm : 1110...1140 Speed

4th rack travel in: 1250

Speed rom : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 7...15

Testing:

Speed : 100 rpm Minimum rack trave: 6.50 rpm : 225

Rack travel in mm : 4.90...5.10 Rack travel in mm : 2.00 rpm : 360...420 Speed

Aneroid/Altitude Compensator Test

1st version Setting

Speed rpm : 500 Pressure hPa : 900

: 13.80...13.90 Rack travel mm

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 10.60...11.00

2nd pressure hPa : 445

Rack travel in m: 12.90...13.00

3rd pressure hPa : 325

Rack travel in m: 11.40. . . 11.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 Speed : 950 rpm

Del.quantity cm3/: 211.0...219.0

1000 s: (209.0...221.0)

Aneroid pressure h: -Speed rom : 500 Del.quantity cm3/: 138.0...142.0 1000 s: (136.0...144.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.80

rpm : 990...1000

STARTING FUEL DELIVERY

LOW IDLE

Speed rpm : 225
Rack travel in mm : 4.90...5.10

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO diaphragm.

For comb. with letter index see VDT-I-400/116.

For sealing see VDT-I-400/117.

Start of delivery - engine: 16° before

TDC

Engine firing sequence: 1-5-4-2-6-3-7-8

BOSCH INJ. PUMP TEST SPECIFICATIONS BEGINNING OF DELIVERY Note remarks Test pressure, bar: 22...24 : CUM 8,3 r Test sheet : 4.35...4.45 : (4.30...4.50) Prestroke mm Edition : 15.06.93 : 12.92 Replaces Rack travel in mm : 9.00...12.00 Test oil : ISO-4113 Firing order : 1-5-3-6-2-4 Combination no. : 0 402 736 807 Injection pump Phasing : 0-60-120-180-240-300 Pump designation : PES6P110A120RS7214 EP type number : 0 412 716 805 Tolerance + - ° : 0.50 (0.75) Governor Governor design. : RQV350...1100PA964 Time to cyl. no. : 1 -1K : 0 421 815 253 Governer no. BASIC SETTING Customer-spec. information 1st speed rpm: 1050Customer : C.D.C. Rack travel in mm: 15.80...15.90 Engine : 6CTA-A Del.quantity cm3/: 20.9...21.1 1st version kW : 201.0 : 2200 Rated speed 100 s: (20.6...21.4) TEST BENCH REQUIREMENTS Spread cm3 : 0.5Test oil 100 s: (0.9) inlet temp. °C : 38...42 2nd speed rpm : 350.0Overflow valve Rack travel in mm: 5.7...5.9 : 1 417 413 047 Del.quantity cm3/: 2.7...3.3 100 s: (2.5...3.5) cm3 : 0.8 Inlet press., bar: 1.50 Spread 100 s: (1.2) Overflow quantity min. 1/h: 115...125 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 101 assembly GUIDE SLEEVE TRAVEL rpm : 3501st speed : 1.80...2.00 Openina travel mm : 207...210 rpm : 450 pressure, bar 2nd speed : 3.10...3.50 travel mm Orifice plate 3rd speed rpm : 600 : 5.10...5.50 diameter mm : 0,6 travel mm rpm : 1000 4th speed : 8.10...8.30 travel mm Test lines : 1 680 750 008 rpm : 1200 5th speed : 9.60...10.00 travel mm Outside diameter x Wall thickness FULL LOAD DELIV. AT FULL LOAD STOP : 6.00X2.00X600 x Length mm 1st version (A) Injection pump setting values Speed rpm : 1050 Insp. values in parentheses Aneroid pressure h: 1500

Del.quantity

: 209.0...211.0

1000 : (206.0...214.0)

Set equal delivery quant.

per values ____

: 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control Lever position degrees: 64...72 Testing: 1st rack travel in: 14.50 rpm : 1145...1155 Speed 2nd rack travel in: 4.00 rpm : 1300...1330 Speed 4th rack travel in: 1400 rpm : 0.00...1.00Speed LOW TOLE 1 Control Lever position degrees: 11...19 Testing: Speed rpm Minimum rack trave: 7.20 Speed : 350 rom Rack travel in mm : 5.70...5.90 CONSTANT REGULATION Speed rpm : 325...520 TORQUE CONTROL Dimension a mm : ? Torque control curve - 1st version rpm : 1050 1st speed Rack travel in m: 15.80...15.90 rpm : 650 2nd speed Rack travel in m: 13.20...13.60 nom : 1100 3rd speed Rack travel in m: 15.50...15.70 Aneroid/Altitude Compensator Test 1st version Setting : 1050 Speed rom Pressure hPa : 1500 Rack travel mm : 15.80...15.90

Measurement 1/min: 1050 Speed 1st pressure hPa : -Rack travel in m: 8.10...8.50 2nd pressure hPa : 335 Rack travel in m: 10.10...10.20 3rd pressure hPa : 845 Rack travel in m: 13.60...14.00

START CUT-OUT 1/min : 290 (300) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1500 Speed rpm : 650 Del.quantity cm3/ : 190.5...196.5 1000 s: (187.5...199.5) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: rpm : 500 Del.quantity cm3/: 91.0...95.0 1000 s: (89.0...97.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 14.50 rpm : 1145...1155 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 135.0...175.0 1000 s: (130.0...180.0) Rack travel in mm : 11.00...12.00 LOW IDLE Speed rpm : 350 Rack travel in mm : 5.70...5.90 Del.quantity cm3/ : 27.0...33.0 1000 s: (25.0...35.0) Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

start of delivery cyl. 1.

: C.D.C. # 3921771 Start-of-delivery mark = 5.5° after

Bow dimension: Sliding-sleeve position = 37.0 mm

Note remarks

: CUM 8,3 r 1 Test sheet : 15.06.93 Edition

: 05.92 Replaces Test oil : ISO-4113

Combination no. : 0 402 736 814

Injection pump

Pump designation : PES6P110A120RS7214

EP type number : 0 412 716 805

Governor

Governor design. : RQV350...1200PA964

-6K

Governer no. : 0 421 815 258

Customer-spec. information Customer : C.D.C.

Engine : 6CTA-A

: 187.0 1st version kW Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 115...125

Test nozzle holder

: 1 688 901 101 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45

; (4.30...4.50)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm: 14.50...14.60

Del.quantity cm3/: 18.3...18.5

100 s: (18.0...18.8)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm: 5.4...5.6 Del.quantity cm3/: 2.7...3.3

100 s: (2.5...3.5)

cm3 : 0.8 Spread

100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

: 1.80...2.00 travel mm 2nd speed : 450 rom

: 3.10...3.50 travel mm

3rd speed rpm : 700

travel mm : 5.90...6.30

4th speed rpm : 1200

travel mm : 9.00...9.20

5th speed : 1400 rpm

travel mm : 10.70...11.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 1200

Del.quantity : 183.0...185.0

1000 : (180.0...188.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 62...70

Testing:

1st rack travel in: 13.50

rpm : 1245...1255

2nd rack travel in: 4.00

rpm : 1405...1435 Speed

4th rack travel in: 1500

Speed rpm : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 11...19

Testing:

Speed : 275 rpm Minimum rack trave: 7.20 rom : 350

Rack travel in mm : 5.40...5.60

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

rpm : 1200 1st speed

Rack travel in m: 14.50...14.60

rpm : 650 2nd speed

Rack travel in m: 11.40...11.80

Aneroid/Altitude

Compensator Test

1st version Setting

Speed

rpm : 1200 Pressure hPa : 1200

: 14.50...14.60 Rack travel mm

Measurement

Speed 1/min: 1200

1st pressure hPa : -

Rack travel in m: 7.50...7.90

2nd pressure hPa : 320

Rack travel in m: 9.60...9.70

3rd pressure hPa : 860

Rack travel in m: 13.30...13.70

START CUT-OUT

1/min: 290 (300) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 650 Del.quantity cm3/: 165.5...171.5

1000 s: (162.5...174.5)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: rpm_ : 500 Speed

Del.quantity cm3/: 86.5...90.5

1000 s: (84.5...92.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.50

Speed rpm : 1245...1255

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 135.0...175.0

1000 s: (130.0...180.0)

Rack travel in mm : 10.70...11.70

LOW IDLE

rpm : 350

Rack travel in mm : 5.40...5.60 Del.quantity cm3/ : 27.0...33.0 1000 s: (25.0...35.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

: C.D.C. # 3921775

Start-of-delivery mark = 5.5° after

start of delivery cyl. 1.

Bow dimension:

Sliding-sleeve position = 37.0 mm

Note remarks

Test sheet : CUM

Edition : 15.06.93 Replaces : 03.93

Test oil : ISO-4113

Combination no. : 0 402 736 834

Injection pump

Pump designation : PES6P120A120RS7265

EP type number : 0 412 726 882

Governor

Governor design. : RQV350...1100PA964

-12K

: 0 421 815 323 Governer no.

Customer—spec. information Customer : C.D.C.

Engine : 6CTA-A

1st version kw : 186.0 : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 086

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 103 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,7

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x3.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 3.95...4.05

: (3.90...4.10)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 13.90...14.00

Del.quantity cm3/ : 21.1...21.3

100 s: (20.8...21.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm: 6.4...6.8 Del.quantity cm3/ : 2.0...2.6

100 s: (1.8...2.8)

cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump

with governor

Spread

GUIDE SLEEVE TRAVEL

1st speed

rpm : 350 : 2.10...2.40 travel mm

rpm : 450 2rid speed

: 3.20...3.60 travel mm

3rd speed : 900 rpm

travel mm : 5.60...6.00

4th speed rpm : 1200

travel mm : 8.10...8.30

5th speed : 1400 mqn

: 10.20...10.60 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 1200

Del.quantity : 211.5...213.5

1000 : (208.5...216.5)

cm3 : 5.00 1000 : (9.00) Spread RATED SPEED 1st version Control lever position degrees: 58...66 Testing: 1st rack travel in: 12.40 Speed rpm : 1245...1275 2nd rack travel in: 4.00 rpm : 1390...1400 Speed 4th rack travel in: 1500 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 13...21 Testing: Speed : 275 rpm Minimum rack trave: 8.30 rpm : 350 Rack travel in mm: 6.40...6.80 CONSTANT REGULATION Speed rpm : 325...520 TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 13.90...14.00 rpm : 650 2nd speed Rack travel in m: 12.00...12.40 3rd speed rpm : 1200 Rack travel in m: 13.40...13.60 4th speed rpm : 750
Rack travel in m: 12.40...12.80 Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 1100 Pressure hPa : 1200

Rack travel mm : 13.90...14.00

Measurement

1/min: 1100 Speed

1st pressure hPa : -

Rack travel in m: 8.60...9.00 2nd pressure hPa : 310.

Rack travel in m: 10.10...10.20

3rd pressure hPa : 650

Rack travel in m: 12.40...12.80

START CUT-OUT

Speed 1/min: 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 : 650 Speed rpm

Del.quantity cm3/: 166.0...172.0 1000 s: (163.0...175.0)

cm3 : 8.00 Spread 1000 s: (12.0)

Aneroid pressure h: 1200 Speed rpm : 750

Del.quantity cm3/: 175.0...181.0 1000 s: (172.0...184.0)

Spread cm3 : 8.001000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 1000 Del.quantity cm3/: 82.5...86.5 1000 s: (80.5...88.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.40

rpm : 1245...1275 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 180.0...220.0

1000 s: (175.0...225.0)

Rack travel in mm : 12.00...13.00

LOW IDLE

Speed rpm : 350

Rack travel in mm : 6.40...6.80 Del.quantity cm3/: 20.0...26.0

1000 s: (18.0...28.0)

cm3 : 8.00Spread 1000 s: (12.00)

Remarks:

: C.D.C. # 3922471

Start-of-delivery mark = 5.5° after

start of delivery cyl. 1.

Bow dimension:

Sliding-sleeve position = 37.0 mm Delivery-valve spring pre-tension = 6.30...6.40 mm. Permissible alteration from 6.00...6.70

Note remarks

Test sheet : CUM

Edition : 21.04.93

Replaces

Test oil : ISO-4113

Combination no. : 0 402 736 835

Injection pump

Pump designation : PES6P120A120RS7265

EP type number : 0 412 726 882

Governor

Governor design. : RQV350...900PA964

-13K

: 0 421 815 324 Governer no.

Customer-spec. information Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 205.0 : 1800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 086

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 90...110

Test nozzle holder

: 1 688 901 103 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,7

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x3.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

: 3.95...4.05 Prestroke mm

: (3.90...4.10)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm: 14.70...14.80

Del.quantity cm3/: 24.3...24.5

100 s: (24.0...24.8)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 350.0 2nd speed Rack travel in mm: 6.4...6.6

Del.quantity cm3/: 1.8...2.4

100 s: (1.6...2.6) Spread

cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 350 1st speed

travel mm : 1.60...1.80

2nd speed rpm : 450

: 3.00...3.40 travel mm

rpm : 600 3rd speed

: 5.20...5.60 travel mm

4th speed rpm : 1000

: 8.40...8.60 travel mn

5th speed rpm : 1150

travel mm : 9.80...10.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900 Aneroid pressure h: 1200

Del.quantity : 243.0...248.0)

cm3 : 5.00 1000 : (9.00) Spread Rack travel in m: 13.20...13.60 START CUT-OUT RATED SPEED $1/\min : 290 (300)$ Speed 1st version Control lever FUEL DELIVERY CHARACTERISTICS position degrees: 60...68 Testing: 1st version 1st rack travel in: 13.40 Aneroid pressure h: 1200 rpm : 1145...1175 Speed rom : 650 Del.quantity cm3/: 226.0...232.0 1000 s: (223.0...235.0) 2nd rack travel in: 4.00 rpm : 1210...1220 Speed cm3 : 8.00 1000 s: (12.0) 4th rack travel in: 1350 Spread Speed rpm : 0.00...1.00 Aneroid pressure h: 1200 LOW IDLE 1 Speed : 750 rpm Del.quantity cm3/: 230.5...236.5 1000 s: (227.5...239.5) Control lever position degrees: 12...20 cm3 : 8.00 Spread Testing: 1000 s: (12.0) Speed rpm : 275 Aneroid pressure h: -Minimum rack trave: 8.10 rpm : 1000 Speed rpm : 350 Del.quantity cm3/: 90.5...94.5 Rack travel in mm : 6.40...6.60 1000 s: (88.5...96.5) CONSTANT REGULATION Speed rpm : 325...520 BREAKAWAY TORQUE CONTROL 1st version Dimension a mm 1mm rack travel less than Torque control curve - 1st version 1st speed rpm : 900 full load rack tr: 13.40 Rack travel in m: 14.70...14.80 rpm : 1145...1175 Speed 2nd speed : 650 rpm Rack travel in m: 13.80...14.20 STARTING FUEL DELIVERY 3rd speed rpm : 1000 Rack travel in m: 14.40...14.60 4th speed rpm : 750 Speed : 100 rpm Del.quantity cm3/: 180.0...220.0 Rack travel in m: 14.10...14.50 1000 s: (175.0...225.0) Rack travel in mm : 12.00...13.00 Aneroid/Altitude Compensator Test LOW IDLE 1st version Speed rpm : 350 Rack travel in mm : 6.40...6.60 Setting Del.quantity cm3/: 18.0...24.0 1000 s: (16.0...26.0) Speed : 1000 rpm hPa : 1200 Pressure Rack travel mm : 14.70...14.80 cm3 : 8.00 Spread 1000 s: (12.00) Measurement 1/min: 1000 Speed Remarks: : C.D.C. # 3922446 1st pressure hPa : Rack travel in m: 10.20...10.60
2nd pressure hPa : 310 Start-of-delivery mark = 5.5° after start of delivery cyl. 1. Rack travel in m: 11.40...11.50 3rd pressure hPa : 650 Bow dimension:

Note remarks

Test sheet

: CUM Edition : 15.06.93 Replaces : 02.93

Test oil : ISO-4113

Combination no. : 0 402 736 836

Injection pump

Pump designation : PES6P120A120RS7265

EP type number : 0 412 726 882

Governor

: RQV350...1000PA964 Governor design.

-14K

Governer no. : 0 421 815 325

Customer-spec, information Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 205.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 086

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 90...110

Test nozzle holder

: 1 688 901 103 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0.7

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00X3.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

: 3.95...4.05 Prestroke mm

: (3.90...4.10)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 14.50...14.60

Del.quantity cm3/: 23.6...23.8

100 s: (23.3...24.1)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm: 6.0...6.2 Del.quantity cm3/: 0.9...1.5

100 s: (0.7...1.7)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 350 1st speed

travel mm : 1.80...2.00

: 450 2nd speed rom

: 3.10...3.50 travel mm

3rd speed : 600 rpm

travel mm : 5.10...5.50

4th speed rpm : 1000

: 8.10...8.30 travel mm

5th speed : 1200 rpm

travel mm : 9.60...10.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1200

Del.quantity : 236.0...238.0

1000 : (233.0...241.0)

cm3 : 5.003rd pressure hPa : 880 Spread 1000 : (9.00)Rack travel in m: 12.90...13.30 RATED SPEED START CUT-OUT 1st version 1/min: 290 (300) Speed Control lever position degrees: 62...70 FUEL DELIVERY CHARACTERISTICS Testina: 1st rack travel in: 12.90 1st version Speed rpm : 1145...1175 Aneroid pressure h: 1200 2nd rack travel in: 4.00 : 650 Speed rpm Del.quantity cm3/: 203.5...209.5 1000 s: (200.5...212.5) Speed rpm : 1295...1305 4th rack travel in: 1400 rpm : 0.00...1.00Speed cm3 : 8.00 Spread 1000 s: (12.0) LOW IDLE 1 Aneroid pressure h: 1200 Control Lever : 750 Speed rpm Del.quantity cm3/: 209.5...215.0 1000 s: (206.5...218.5) position degrees: 12...20 Rack travel in mm: 6.1 cm3 : 8.00 Spread Testing: 1000 s: (12.0) Speed rpm : 275 Aneroid pressure h: rpm : 1000 Minimum rack trave: 8.10 Speed Del.quantity cm3/: 88.0...92.0 rpm : 350 Rack travel in mm : 6.00...6.20 1000 s: (86.0...94.0) CONSTANT REGULATION Speed rpm : 325...520 BREAKAWAY TORQUE CONTROL 1st version Dimension a mm :? 1mm rack travel less than Tarque control curve - 1st version 1st speed rpm : 1000 full load rack tr: 12.90 Rack travel in m: 14.50...14.60 rpm : 1145...1175 Speed 2nd speed rpm : 650 Rack travel in m: 13.10...13.50 STARTING FUEL DELIVERY 3rd speed rpm : 1100
Rack travel in m: 13.90...14.10
4th speed rpm : 750 rpm : 100 Speed Rack travel in m: 13.40...13.80 Del.quantity cm3/: 180.0...220.0 1000 s: (175.0...225.0) Aneroid/Altitude Rack travel in mm : 12.00...13.00 Compensator Test LOW IDLE 1st version Speed : 350 rpm Settina Rack travel in mm : 6.00...6.20 Speed : 1000 Del.quantity cm3/ : 9.5...15.5 rpm Pressure hPa : 1200 1000 s: (7.5...17.5) Rack travel mm : 14.50...14.60 cm3 : 8.00 Spread 1000 s: (12.00) Measurement 1/min: 1000 Speed Remarks: : C.D.C. # 3922427 1st pressure hPa : -Rack travel in m: 8.80...9.20 Start-of-delivery mark = 5.5° after 2nd pressure hPa : 400 start of delivery cyl. 1.

Rack travel in m: 10.30...10.40

Bow dimension: Sliding-sleeve position = 37.0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS BEGINNING OF DELIVERY Test pressure, bar: 22...24 Note remarks : 3.55...3.65 Prestroke mm : (3.50...3.70) Test sheet : CUM Edition : 15.06.93 Rack travel in mm : 9.00...12.00 Replaces Firing order : 1-5-3-6-2-4 Test oil : ISO-4113 Combination no. : 0 402 736 842 : 0-60-120-180-240-300 Phasing Injection pump Pump designation : PES6P12DA12ORS7281 Tolerance + - ° : 0.50 (0.75) EP type number : 0 412 726 890 Governor Time to cyl. no. : 1 Governor design. : RQV400...1250PA1060K : 0 421 815 344 Governer no. BASIC SETTING Customer-spec. information 1st speed rpm: 1250 Customer : C.D.C. Rack travel in mm : 13.40...13.50 Engine : 6BTA-A Del.guantity cm3/: 15.7...15.9 1st version kW : 119.0 Rated speed : 2500 100 s: (15.4...16.2) TEST BENCH REQUIREMENTS cm3 : 0.8Spread Test oil 100 s: (1.2) inlet temp. °C : 38...42 rpm : 400.0 2nd speed Overflow valve Rack travel in mm: 6.0...6.4 Del.quantity cm3/: 1.5...2.1 100 s: (1.3...2.3) : 1 417 413 047 Inlet press., bar: 1.50 cm3 : 0.4Spread 100 s: (0.8) Overflow quantity min. 1/h: 105...125 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 103 assembly GUIDE SLEEVE TRAVEL rpm : 400 1st speed **Opening** : 1.40...1.60 travel mm pressure, bar : 207...210 2nd speed rpm : 550 : 2.50...2.90 travel mm Orifice plate : 800 3rd speed rpm : 0.7 diameter mm : 4.00...4.40 travel mm 4th speed : 1250 rpm : 6.90...7.10 travel mm Test Lines : 1 680 750 015 : 1500 5th speed : 9.10...9.50 travel mm Outside diameter x Wall thickness FULL LOAD DELIV. AT FULL LOAD STOP x Length mm : 6.00x3.00x600

1st version

Del.quantity

rpm : 1250

: 157.0...159.0 1000 : (154.0...162.0)

Aneroid pressure h: 1200

Speed

A24

(A) Injection pump setting values

Set equal delivery quant.

per values

Insp. values in parentheses

cm3 : 8.00Spread 1000 : (12.00) RATED SPEED 1st version Control lever position degrees: 58...66 Testina: 1st rack travel in: 12.40 rpm : 1320...1330 Speed 2nd rack travel in: 4.00 Speed rpm : 1465...1495 4th rack travel in: 1550 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 12...20 Testina: Speed : 275 rpm Minimum rack trave: 7.80 rpm : 400 Speed Rack travel in mm : 6.00...6.40 CONSTANT REGULATION Speed rpm : 325...520 TORQUE CONTROL. Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 1250 Rack travel in m: 13.40...13.50 2nd speed rpm : 800 Rack travel in m: 11.60...12.00 rpm : 500 3rd speed Rack travel in m: 11.40...11.80 4th speed rpm : 900 Rack travel in m: 12.00...12.40 Aneroid/Altitude Compensator Test 1st version Setting : 1250 Speed rom Pressure hPa : 1200 Rack travel mm : 13.40...13.50 Measurement 1/min: 1250 Speed

START CUT-OUT Speed 1/min : 250 (260) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 Speed rpm : 800 Del.quantity cm3/ : 124.5...130.5 1000 s: (121.5...133.5) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 1200 Speed : 900 rpm Del.quantity cm3/: 137.5...143.5 1000 s: (134.5...146.5) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: rpm : 1250 Speed Del.quantity cm3/: 108.5...112.5 1000 s: (106.5...114.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.40 rpm : 1320...1330 Speed STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 135.0...175.0 1000 s: (130.0...180.0) Rack travel in mm : 13.00...14.00 LOW IDLE rpm : 400Speed Rack travel in mm : 6.00...6.40 Del.quantity cm3/: 15.0...21.0 1000 s: (13.0...23.0) cm3 : 4.00Spread 1000 s: (8.00) Remarks: : C.D.C. # 3925085 Start-of-delivery blocking 5,75° after

start of delivery of cylinder no. 1.

Rack travel in m: 12.50...12.90

1st pressure hPa : -

2nd pressure hPa : 265

3rd pressure hPa : 440

Rack travel in m: 10.30...10.70

Rack travel in m: 11.10...11.20

Note remarks

Test sheet Edition : CUM

: 15.06.93

Replaces

Test oil : ISO-4113

Combination no. : 0 402 736 845

Injection pump

Pump designation : PES6P120A120RS7286

EP type number : 0 412 726 894

Governor

: RQV350...1100PA964 Governor design.

-20K

Governer no. : 0 421 815 352

Customer-spec. information Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 224.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 086

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 95...115

Test nozzle holder

: 1 688 901 103 assembly

Opening.

pressure, bar : 207...210

Orifice plate

diameter mm : 0,7

Test Lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x3.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 3.95...4.05

: (3.90...4.10)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 15.00...15.10

Del.guantity cm3/: 24.9...25.1

100 s: (24.6...25.4)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 350.0 2nd speed Rack travel in mm: 6.4...6.8

Del.quantity cm3/: 1.8...2.4 100 s: (1.6...2.6)

cm3 : 0.8Spread

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rom : 350

: 2.10...2.40 travel mm

2nd speed : 450 rpm

travel mm : 3.20...3.60

3rd speed : 900 rpm

travel mm : 5.60...6.00

4th speed : 1200 rpm

: 8.10...8.30 travel mm

5th speed : 1400 rpm

travel mm : 10.20...10.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100Aneroid pressure h: 1200

Del.quantity : 249.0...251.0

1000 : (246.0...254.0)

cm3 : 5.00Spread Rack travel in m: 13.40...13.80 1000 : (9.00) START CUT-OUT RATED SPEED 1/min: 290 (300) Speed 1st version Control lever FUEL DELIVERY CHARACTERISTICS position degrees: 61...69 Testina: 1st version 1st rack travel in: 13.30 Aneroid pressure h: 1200 Speed rpm : 650 Del.quantity cm3/ : 209.0...215.0 1000 s: (206.0...218.0) rpm : 1250...1280 Speed 2nd rack travel in: 4.00 Speed rpm: 1395...1405 4th rack travel in: 1475 Speed Spread cm3 : 8.00 rpm : 0.00...1.00 1000 s: (12.0) Speed Aneroid pressure h: 1200 LOW IDLE 1 : 750 Speed rpm Del.quantity cm3/: 210.5...216.5 1000 s: (207.5...219.5) Spread cm3 : 8.00 Control lever position degrees: 14...22 Testing: 1000 s: (12.0) Speed rpm : 275 Minimum rack trave: 7.70 Aneroid pressure h: rpm : 1000 Speed Del.quantity cm3/: 90.5...94.5 : 350 Speed rom Rack travel in mm : 6.40...6.80 1000 s: (88.5...96.5) CONSTANT REGULATION rpm : 325...520 Speed **BREAKAWAY** TORQUE CONTROL 1st version Dimension a mm 1mm rack travel less than Torque control curve - 1st version 1st speed rpm : 1100 full load rack tr: 13.30 Rack travel in m: 15.00...15.10 rpm : 1250...1280 Speed : 650 2nd speed rom Rack travel in m: 13.30...13.70 STARTING FUEL DELIVERY : 1200 3rd speed rpm Rack travel in m: 14.30...14.50 : 750 4th speed rpm Speed : 100 rpm Del.quantity cm3/: 180.0...220.0 1000 s: (175.0...225.0) Rack travel in m: 13.60...14.00 Aneroid/Altitude Rack travel in mm : 12.00...13.00 Compensator Test LOW IDLE 1st version rpm : 350 Speed Setting Rack travel in mm : 6.40...6.80 Del.quantity cm3/: 18.0...24.0 1000 s: (16.0...26.0) Speed : 1100 rpm hPa : 1200 Pressure Rack travel mm : 15.00...15.10 cm3 : 8.00 Spread 1000 s: (12.00) Measurement 1/min: 1100 Speed Remarks: : C.D.C. # 3922425 1st pressure hPa : -Rack travel in m: 9.10...9.50 Start-of-delivery blocking 6,5° after 2nd pressure hPa : 345 Rack travel in m: 10.80...10.90 start of delivery of cylinder no. 1.

Bow dimension:

3rd pressure hPa : 725

Sliding-sleeve position = 37.0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1-5-3-6-2-4 Note remarks Test sheet : SAK Phasina : 0-60-120-180-240-300 Edition : 22.06.93 Replaces Tolerance + - ° : 0.50 (0.75) : ISO-4113 Test oil Time to cyl. no. : 1 Combination no. : 0 402 746 939 BASIC SETTING Injection pump Pump designation : PES6P130A320RS7271 1st speed rpm: 1500 EP type number : 0 412 736 804 Governor Rack travel in mm: 10.40...10.50 Governor design. : RQV275...1500PA1049 Governer no. : D 421 814 032 Del.quantity cm3/: 31.9...32.1 Customer-spec. information 100 s: (31.6...32.4) Customer : SEATEK Spread cm3 : 0.5: 64/\(\sigma\) Engine 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 450 Test oil Rack travel in mm: 2.8...3.2 inlet temp. °C : 38...42 Del.quantity cm3/: 2.0...2.6 100 s: (1.7...2.9) Overflow valve cm3 : 0.8 Spread : 1 417 413 025 100 s: (1.2) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 105 assembly GUIDE SLEEVE TRAVEL 1st speed rpm : 1550 Openina travel mm : 8.10...8.30 pressure, bar : 207...210 2nd speed rpm : 450 : 0.90...1.10 travel mm Orifice plate 3rd speed rpm : 700 diameter mm : 0,8 : 2.70...3.30 travel mm 4th speed rpm : 1050 : 4.50...5.10 travel mm Test lines : 1 680 750 075 rpm : 1750 5th speed travel mm : 11.00...12.00 Outside diameter x Wall thickness GUIDE SLEEVE POSITION x Length mm : 8.00x2.50x1000 Control-Lever position Degree: -1 (A) Injection pump setting values rpm : 1575 Insp. values in parentheses Rack travel in mm : 8.10...10.70 Set equal delivery quant. per values ____ FULL LOAD DELIV. AT FULL LOAD STOP BEGINNING OF DELIVERY 1st version

rpm : 1500

Del.quantity : 319.0...324.0)

Aneroid pressure h: 1000

Speed

B01

Prestroke mm

Test pressure, bar: 25...27

Rack travel in mm : 9.00...12.00

: 4.40...4.50 : (4.35...4.55) Spread

cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 102...110

Testing:

1st rack travel in: 9.40

Speed rpm : 1540...1550

2nd rack travel in: 4.00

Speed rpm : 1630...1660

4th rack travel in: 1750

Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever

position degrees: 64...72

Testing:

Speed rpm : 100 Minimum rack trave: 6.20 rpm : 450 Speed

Rack travel in mm : 2.90...3.10 Rack travel in mm : 2.00

Speed rpm : 460...500

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rpm Pressure hPa : 1000

Rack travel mm : 10.40...10.50

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 6.30...6.50

2nd pressure hPa : 300 Rack travel in m: 9.40...9.50

3rd pressure hPa : 185

Rack travel in m: 7.20...7.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 138.0...142.0

1000 s: (135.0...145.0)

BREAKAWAY

B₀₂

1st version 1mm rack travel less than

full load rack tr: 9.40

Speed rpm : 1540...1550

:

Remarks:

APPLICATION

Ship

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : IHC : 15.06.93 Test sheet Edition Replaces : 01.93 Test oil : ISO-4113 Combination no. : 0 402 746 940 Injection pump Pump designation: PES6P120A320LS7284 EP type number : 0 412 726 891 Governor Governor design. : RQV350...1000PA1054K Governer no. : 0 421 815 337 Customer-spec. information Customer : NAVISTAR Engine : DTA-531 1st version kW : 224.0 Rated speed : 2000 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 2 417 413 076 Inlet press., bar: 2.80 Overflow quantity min. 1/h: 170...190 Test nozzle holder : 1 688 901 101 assembly Opening | : 207...210 pressure, bar Orifice plate diameter mm : 0,6

: 1 680 750 008 : 6.00X2.00X600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____

BEGINNING OF DELIVERY Test pressure, bar: 22...24 : 2.85...2.95 Prestroke mm : (2.80...3.00) Rack travel in mm : 14.00...17.00 : 1-5-3-6-2-4 Firing order Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75)Time to cyl. no. : 1 BASIC SETTING rpm: 1000 1st speed Rack travel in mm : 14.30...14.40 Del.guantity cm3/: 21.8...22.0 100 s: (21.5...22.3) Spread cm3 : 0.8100 s: (1.2) rpm : 350.02nd speed Rack travel in mm: 5.7...5.9 Del.quantity cm3/: 1.5...2.1 100 s: (1.3...2.3) cm3 : 0.5Spread 100 s: (0.9) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rom : 350 1.40...1.60 travel mm rpm : 500 2nd speed travel mm : 3.70...4.10 rpm : 800 3rd speed travel mm ; 6.80...7.20 rpm : 1000 4th speed : 9.10...9.30 travel mm rpm : 1150 5th speed : 11.20...11.60 travel mm FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1000 Aneroid pressure h: 1500

Del.quantity : 218.0...220.0 1000 : (215.0...223.0)

Test Lines

x Length mm

Outside diameter x Wall thickness

Spread cm3 : 8.00 1000 : (12.00) RATED SPEED 1st version Control lever position degrees: 61...69 Testina: 1st rack travel in: 13.30 Speed rpm : 1045...1075 2nd rack travel in: 4.00 rpm : 1170...1180 Speed 4th rack travel in: 1250 rom : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 17...25 Testing: Speed rpm Minimum rack trave: 7.20 rpm : 350 Speed Rack travel in mm : 5.70...5.90 CONSTANT REGULATION Speed rpm : 325...520 TORQUE CONTROL Dimension a mm Torque control curve - 1st version rpm : 1000 1st speed Rack travel in m: 14.30...14.40 : 650 rpm 2nd speed Rack travel in m: 14.20...14.40 3rd speed rpm : 500 Rack travel in m: 13.30...13.70 Aneroid/Altitude Compensator Test 1st version Settina Speed : 1000 rpm hPa : 1500 Pressure Rack travel mm : 14.30...14.40 Measurement Speed 1/min: 1000 1st pressure hPa : -Rack travel in m: 9.90...10.30

START CUT-OUT 1/min: 265 (275) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1500 : 650 Speed rpin Del.quantity cm3/: 232.5...238.5 1000 s: (229.5...241.5) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: rpm : 800 Speed Del.quantity cm3/: 99.0...103.0 1000 s: (97.0...105.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 13.30 Speed rpm : 1045...1075 STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 125.0...165.0 1000 s: (120.0...180.0) Rack travel in mm : 19.00...21.00 LOW IDLE Speed rpm : 350 Rack travel in mm : 5.70...5.90 Del.quantity cm3/: 15.5...21.5 1000 s: (13.5...23.5) cm3 : 5.00 Spread 1000 s: (9.00) Remarks: : NAVISTAR #1819915091 Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery Bow dimension: Sliding-sleeve position = 37.0 mm Delivery-valve spring pre-tension = 6.30...6.40 mm.

Permissible alteration from 6.00...6.70

2nd pressure hPa : 380

3rd pressure hPa : 900

Rack travel in m: 11.30...11.40

Rack travel in m: 13.10...13.50

BOSCH INJ. PUMP TEST SPECIFICATIONS BEGINNING OF DELIVERY Note remarks Test pressure, bar: 22...24 Test sheet : NAV : 2.85...2.95 Prestroke mm Edition : 15.06.93 : (2.80...3.00) Rack travel in mm : 10.00...13.00 Replaces : ISO-4113 Test oil : 1-5-3-6-2-4 Firing order Combination no. : 0 402 746 941 Injection pump Phasina : 0-60-120-180-240-300 Pump designation: PES6P120A320LS7284 EP type number : 0 412 726 891 Tolerance + - ° : 0.50 (0.75) Governor Governor design. : RQV350...1000PA1054 Time to cyl. no. : 1 -1K : D 421 815 338 Governer no. BASIC SETTING Customer-spec. information 1st speed rpm: 1000 Customer : NAVISTAR Rack travel in mm : 14.30...14.40 Engine : DTA-531 Del.quantity cm3/: 21.5...21.7 1st version kW : 205.0 : 2000 Rated speed 100 s: (21.2...22.0) TEST BENCH REQUIREMENTS Spread cm3 : 0.8Test oil 100 s: (1.2) inlet temp. °C : 38...42 2nd speed rpm : 350.0Rack travel in mm: 5.7...5.9 Overflow valve : 2 417 413 076 Del.quantity cm3/: 1.5...2.1 100 s: (1.3...2.3) cm3 : 0.5 Inlet press., bar: 2.80 Spread 100 s: (0.9) Overflow quantity min. 1/h: 190...210 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 101 assembly GUIDE SLEEVE TRAVEL 1st speed rpm : 350 : 1.40...1.60 Openina travel mm pressure, bar : 207...210 rpm : 500 2nd speed : 3.70...4.10 travel mm Orifice plate rpm : 800 3rd speed diameter mm : 0,6 travel mm : 6.80...7.20 4th speed rpm : 1000 travel mm : 9.10...9.30 Test Lines : 1 680 750 008 5th speed rpm : 1150 : 11.20...11.60 travel mm Outside diameter x Wall thickness FULL LOAD DELIV. AT FULL LOAD STOP : 6.00x2.00x600 x Length mm 1st version (A) Injection pump setting values Speed rpm : 1000 Insp. values in parentheses Aneroid pressure h: 1500 Del.quantity Set equal delivery quant. : 215.0...217.0

1000 : (212.0...220.0)

per values

Spread cm3: 8.00 START CUT-OUT 1000 : (12.00) Speed 1/min : 265 (275) RATED SPEED FUEL DELIVERY CHARACTERISTICS 1st version Control lever position degrees: 63...71 1st version Aneroid pressure h: 1500 Testina: Speed : 650 rom 1st rack travel in: 13.30 Del.quantity sm3/: 223.0...229.0 rpm : 1040...1070 Speed 1000 s: (220.0...232.0) 2nd rack travel in: 4.00 Spread cm3 : 8.00rpm : 1170...1180 Speed 1000 s: (12.6) 4th rack travel in: 1300 Aneroid pressure h: -Speed rpm : 800 Del.quantity cm3/ : 99.0...103.0 1000 s: (97.0...105.0) rpm : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 17...25 BREAKAWAY Testing: Speed rom 1st version Minimum rack trave: 7.50 1mm rack travel less than : 350 rom Rack travel in mm : 5.70...5.90 full load rack tr: 13.30 Speed rpm : 1040...1070 CONSTANT REGULATION Speed rpm : 325...520 STARTING FUEL DELIVERY TORQUE CONTROL Dimension a mm : ? Speed : 100 rpm Del.quantity cm3/: 125.0...165.0 1000 s: (120.0...180.0) Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 14.30...14.40 Rack travel in mm : 19.00...21.00 : 650 2nd speed rpm Rack travel in m: 14.00...14.20 LOW IDLE 3rd speed rpm : 500 Rack travel in m: 12.80...13.20 Speed rpm Rack travel in mm : 5.70...5.90 Aneroid/Altitude Del.quantity cm3/: 15.5...21.5 Compensator Test 1000 s: (13.5...23.5) cm3 : 5.00 1000 s: (9.00) Spread 1st version Setting Remarks: : 1000 Speed rpm : NAVISTAR #1819916091 Pressure hPa : 1500 : 14.30...14.40 Rack travel mm Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 Measurement start of delivery 1/min: 1000 Speed Bow dimension: 1st pressure hPa : -Sliding-sleeve position = 37.0 mm Rack travel in m: 9.90...10.30 2nd pressure hPa : 370 Rack travel in m: 11.10...11.20 Delivery-valve spring pre-tension = 6.30...6.40 mm. Permissible alteration from 6.00...6.70 3rd pressure hPa : 880 Rack travel in m: 12.90...13.30

BOSCH INJ. PUMP TEST SPECIFICATIONS BEGINNING OF DELIVERY Test pressure, bar: 22...24 Note remarks Prestroke mm : 2.85...2.95 Test sheet : NAV : (2.80...3.00) Edition : 21.04.93 Rack travel in mm : 10.00...13.00 Replaces Firing order : 1-5-3-6-2-4 Test oil : ISO-4113 Combination no. : 0 402 746 946 Phasing : 0-60-120-180-240-300 Injection pump Pump designation : PES6P120A320LS7284 Tolerance $+ - ^{\circ} : 0.50 (0.75)$ EP type number : 0 412 726 891 Governor Time to cyl. no. : 1 Governor design. : RQV350...1100PA1066K : 0 421 815 349 Governer no. BASIC SETTING Customer-spec. information 1st speed rpm: 1100 Customer : NAVISTAR Rack travel in mm : 13.80...13.90 Engine : DTA-531 Del.quantity cm3/: 19.9...20.1 1st version kW : 222.0 Rated speed : 2200 100 s: (19.6...20.4) TEST BENCH REQUIREMENTS Spread cm3 : 0.8Test oil 100 s: (1.2) inlet temp. °C : 38...42 2nd speed rpm : 350.0 Rack travel in mm: 5.7...5.9 Overflow valve : 2 417 413 076 Del.quantity cm3/: 1.5...2.1 100 s: (1.3...2.3) Inlet press., bar: 2.80 Spread cm3 : 0.5100 s: (0.9) Overflow quantity min. 1/h: 170...190 (B) Setting of injection pump with governor Test nozzle holder assembly : 1 688 901 101 GUIDE SLEEVE TRAVEL 1st speed rpm : 350 Opening | : 1.90...2.10 travel mm pressure, bar : 207...210 2nd speed : 500 rpm : 3.90...4.30 travel mm Orifice plate 3rd speed rpm : 800 diameter mm : 0,6 travel mm : 6.60...7.00 4th speed rpm : 1100 : 9.00...9.20 travel mm Test Lines : 1 680 750 008 5th speed : 1250 rpm : 10.60...11.00 travel mm Outside diameter x Wall thickness FULL LOAD DELIV. AT FULL LOAD STOP x Length mm : 6.00x2.00x600 1st version (A) Injection pump setting values Speed rpm : 1100 Insp. values in parentheses Aneroid pressure h: 1500 Del.quantity : 199.3...204.5)

Set equal delivery quant.

per values ____

Spread : 8.00 cm31000 : (12.00)RATED SPEED 1st version Control lever position degrees: 61...69 Testing: 1st rack travel in: 12.80 rpm : 1140...1170 Speed 2nd rack travel in: 4.00 rpm : 1275...1285 Speed 4th rack travel in: 1350 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 15...23 Testina: Speed : 275 rpm Minimum rack trave: 7.50 Speed : 350 rom Rack travel in mm : 5.78...5.90 CONSTANT REGULATION Speed rpm : 325...520 TORQUE CONTROL Dimension a mm : ? Torque control curve - 1st version : 1100 1st speed rpm Rack travel in m: 13.80...13.90 2nd speed rpm : 650 Rack travel in m: 13.00...13.20 3rd speed rpm : 500 Rack travel in m: 12.20...12.60 Aneroid/Altitude Compensator Test 1st version Setting Speed : 1100 rpm hPa : 1500 Pressure Rack travel mm : 13.80...13.90 Measurement 1/min: 1100 Speed 1st pressure hPa : -Rack travel in m: 9.30...9.70 2nd pressure hPa : 330 Rack travel in m: 10.60...10.70

START CUT-OUT 1/min: 280 (290) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1500 Speed rom : 650 Del.quantity cm3/: 198.5...204.5 1000 s: (195.5...207.5) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: -Speed : 800 rpm Del.quantity cm3/: 91.5...95.5 1000 s: (89.5...97.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.80 rpm : 1140...1170 Speed STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 125.0...165.0 1000 s: (120.0...180.0) Rack travel in mm : 19.00...21.00 LOW IDLE Speed rpm : 350 Rack travel in mm : 5.70...5.90 Del.quantity cm3/: 15.5...21.5 1000 s: (13.5...23.5) Spread cm3 : 5.00 1000 s: (9.00) Remarks: : NAVISTAR #1820267c91 Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery Bow dimension: Sliding-sleeve position = 37.0 mm Delivery-valve spring pre-tension = 6.30...6.40 mm. Permissible alteration from 6.00...6.70

3rd pressure hPa : 840

Rack travel in m: 12.40...12.70

Note remarks

Test sheet : DEE 7,7 n Edition : 15.06.93 Replaces : 02.92

Test oil : ISO-4113

Combination no. : 0 402 776 808

Injection pump

Pump designation : PES6P120A720RS7223

EP type number : 0 412 726 843

Governor

Governor design. : RSV400...1050P0A547

Governer no. : 0 421 833 349

Customer-spec. information

Customer : JOHN DEERE

: 6101 HZ010 Engine

1st version kW : 241.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 075

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 140...150

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x3.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 3.55...3.65 Prestroke mm

: (3.50...3.70)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing. : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no.

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 21.2...21.4

100 s: (20.9...21.7)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 400.02nd speed Rack travel in mm: 6.0...6.2 Del.quantity cm3/: 2.2...2.8 100 s: (2.0...3.0)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed Aneroid pressure h: 1200

Del.quantity : 212.5...214.5 1000 : (209.5...217.5)

: 5.00 cm3

1000 : (9.00)

RATED SPEED

Spread

1st version

Control lever ' position degrees: 42...50 Testing: 1st rack travel in: 11.70 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 rpm : 1155...1165 3rd rack travel in: 4.00 Speed rpm : 1155...1185 4th rack travel in: 1300 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 22...30 Setting point wout bumper spring rpm : 400 Rack travel in mm : 5.6 Testing: Speed rpm : 100 Minimum rack trave: 19.00 rpm : 400 Rack travel in mm : 6.00...6.20 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 12.70...12.80 2nd speed rpm : 850 Rack travel in m: 13.20...13.40 Aneroid/Altitude Compensator Test 1st version Setting Speed mqn : 500 Pressure hPa : 1200 Rack travel mm : 13.20...13.40 Measurement Speed 1/min : 500 1st pressure hPa : -Rack travel in m: 10.60...10.80 2nd pressure hPa : 290 Rack travel in m: 11.30...11.40 3rd pressure hPa : 620 Rack travel in m: 12.50...12.90 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 Speed rpm : 850

Del.quantity cm3/: 222.0...228.0 1000 s: (219.0...231.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 137.5...141.5 1000 s: (135.5...143.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.70 Speed rpm : 1090...1100

STARTING FUEL DELIVERY

rpm : 100 Speed Del.quantity cm3/: 85.0...125.0 1000 s: (80.0...130.0) Rack travel in mm: 20.00...21.00

LOW IDLE

Speed rpm : 400 Rack travel in mm : 6.00...6.20 Del.quantity cm3/: 22.5...28.5 1000 s: (20.5...30.5) Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

Adjustment without torque-control E47014 spring retainer with 0.5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mark at 10° cam rotation angle after start of delivery, cylinder 1

Note remarks

Test sheet : DEE

: 15.06.93 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 776 809

Injection pump

Pump designation : PES6P120A720RS7255

EP type number : 0 412 726 881

Governor

Governor design. : RSV475...1000P0A551

Governer no. : 0 421 833 360

Customer-spec. information

Customer : JOHN DEERE

Engine : 6101 ATO10

1st version kW : 221.0

Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 079

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 140...150

Test nozzle holder

assembly : 1 688 901 101

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x3.00x600

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 3.55...3.65 Prestroke mm

: (3.50...3.70)

Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed ਾਡ**ਸ : 1000**

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 21.5...21.7

100 s: (21.2...22.0)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 475.0 2nd speed Rack travel in mm : 5.3...5.5 Del.quantity cm3/ : 2.2...2.8 100 s: (2.0...3.0)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000Aneroid pressure h: 1200

: 215.0...217.0 Del.quantity

1000 : (212.0...220.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 41...49

Testing:

1st rack travel in: 11.10

rpm : 1050...1060 Speed

2nd rack travel in: 4.00

rpm : 1120...1130 Speed

3rd rack travel in: 4.00

Speed rpm : 1125...1155

4th rack travel in: 1250

rpm : 0.30...1.40 Speed

LOW IDLE 1

Control lever

position degrees: 21...29

Setting point w/out bumper spring

rpm : 475

Rack travel in mm: 4.9

Testing:

Speed : 100 rom

Minimum rack trave: 19.00

rpm : 475

Rack travel in mm : 5.30...5.50

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500 hPa : 1200 rom

Pressure

Rack travel mm : 12.10...12.20

Measurement

Speed $1/\min : 500$

1st pressure hPa : -

Rack travel in m: 9.80...10.00

2nd pressure hPa : 460

Rack travel in m: 10.60...10.70

3rd pressure hPa : 735

Rack travel in m: 11.50...11.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

____rpm_ : 500 Speed

Del.quantity cm3/: 136.0...140.0

1000 s: (134.0...142.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.10

rpm : 1050...1060 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 85.0...125.0 1000 s: (80.0...130.0) Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 475
Rack travel in mm : 5.30...5.50
Del.quantity cm3/ : 22.0...28.0
1000 s: (20.0...30.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

Start-of-delivery blocking 8,75° after 3 start of delivery of cylinder no. 1.

Starting/full-load transition speed from holding magnet = 450 1/min.

Note remarks

Test sheet : DEE

Edition : 15.06.93

Replaces :

Test oil : ISO-4113

Combination no. : 0 402 776 810

Injection pump

Pump designation : PES6P120A720RS7255

EP type number : 0 412 726 881

Governor

Governor design. : RSV475...1050P0A547

Governer no. : 0 421 833 380

Customer-spec. information

Customer : JOHN DEERE

Engine : 6101 AT012

1st version kW : 209.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 079

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 140...150

Test nozzle holder

assembly : 1 688 901 101

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x3.00x600

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65

: (3.50...3.70) Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. ro. : 1

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 11.80...11.90

Del.quantity cm3/: 20.9...21.1

100 s: (20.6...21.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 475.0 Rack travel in mm : 5.0...5.2

Del.quantity cm3/: 1.7...2.3

100 s: (1.5...2.5) Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3

peed rpm: 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 1500

Del.quantity : 209.0...211.0 1000 : (206.0...214.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 51...59

Testina:

1st rack travel in: 10.80

: 1090...1100 Speed rpm

2nd rack travel in: 4.00

rpm : 1185...1195 Speed

3rd rack travel in: 4.00

rpm : 1180...1210 Speed

4th rack travel in: 1300

rpm : 0.30...1.40 Speed

LOW IDLE 1

Control lever

position degrees: 33...41

Setting point w/out bumper spring

Speed rom : 475 Rack travel in mm: 4.6

Testina:

Speed : 100 rom

Minimum rack trave: 19.00 rpm : 475

Rack travel in mm : 5.00...5.20

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 11.80...11.90

rpm : 700 2nd speed

Rack travel in m: 12.10...12.30

Aneroid/Altitude Compensator Test

1st version Setting

Speed

: 500 man

hPa : 1500 Pressure

Rack travel mm : 11.80...11.90

Measurement

Speed $1/\min : 500$

1st pressure hPa : -

Rack travel in m: 9.90...10.10

2nd pressure hPa : 530

Rack travel in m: 10.60...10.70

3rd pressure hPa : 850

Rack travel in m: 11.50...11.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500

Speed rpm : 700 Del.quantity cm3/: 214.0...220.0 1000 s: (211.0...223.0)

Aneroid pressure h: -Speed

rpm_ : 500

Del.quantity cm3/: 144.0...148.0

1000 s: (142.0...150.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.80

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 85.0...125.0

1000 s: (80.0...130.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

rpm : 475 Speed

Rack travel in mm : 5.00...5.20 Del.quantity cm3/: 17.5...23.5 1000 s: (15.5...25.5)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

: JOHN DEERE # RE46181

Start-of-delivery blocking 8,75° after start of delivery of cylinder no. 1.

Starting/full-load transition speed from holding magnet = 450 1/min.

Adjustment without torque-control spring retainer with 1 mm Less control-rod travel. Increase in

full-load delivery with torque-control

spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS BEGINNING OF DELIVERY Note remarks Test pressure, bar: 27...29 Test sheet : DEE Prestroke mm : 3.55...3.65 : (3.50...3.70) Edition : 15.06.93 Replaces Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Test oil : ISO-4113 Combination no. : 0 402 776 811 Injection pump Phasing : 0-60-120-180-240-300 Pump designation : PES6P120A720RS7255 EP type number : 0 412 726 881 Tolerance + - ° : 0.50 (0.75) Governor Governor design. : RSV400...1050P0A547 Time to cyl. no. : 1 Governer no. : 0 421 833 409 BASIC SETTING Customer-spec. information 1st speed rpm : 1050Customer : JOHN DEERE Rack travel in mm: 12.50...12.60 Engine : 6101 AF010 Del.quantity cm3/: 22.5...22.7 1st version kW : 242.0 Rated speed : 2100 100 s: (22.2...23.0) TEST BENCH REQUIREMENTS Spread cm3 : 0.5Test oil 100 s: (0.9) inlet temp. °C : 38...42 rpm : 400.0 2nd speed Overflow valve Rack travel in mm: 5.4...5.6 : 2 417 413 079 Del.quantity cm3/ : 2.4...3.0 100 s: (2.2...3.2) Inlet press., bar: 1.50 Spread cm3 : 0.8 100 s: (1.2) Overflow quantity min. 1/h: 140...150 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -3 assembly : 1 688 901 101 rpm : 800 Rack travel in mm : 0.30...0.70 Opening. : 207...210 pressure, bar Governor spring pre-tension Click setting x : 5.00Orifice plate diameter mm : 0,6 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Test lines : 1 680 750 015 Speed rpm : 1050 Aneroid pressure h: 1500 Del.quantity : 223.3...230.5) Outside diameter × Wall thickness × Length mm : 6.00X3.00X600 : 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values _

Control lever

position degrees: 41...49

Testina:

1st rack travel in: 11.50

rpm : 1095...1105 Speed

2nd rack travel in: 4.00

: 1150...1160 Speed nom

3rd rack travel in: 4.00

: 1150...1180 rpar Speed

4th rack travel in: 1250

Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 21...29

Setting point w/out bumper spring

Speed rpm : 400 Rack travel in mm: 5.0

Testing:

Speed חהכורו : 100

Minimum rack trave: 19.00

Speed rpm: 400 Rack travel in mm: 4.90...5.10

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1050 1st speed

Rack travel in m: 12.50...12.60

rpm : 750 2nd speed

Rack travel in m: 12.90...13.10

Aneroid/Altitude

Compensator Test

1st version

Settina

Speed : 500 man Pressure hPa : 1500

Rack travel mm : 12.90...13.10

Measurement

1/min: 500 Speed

1st pressure hPa :-

Rack travel in m: 9.60...9.80

2nd pressure hPa : 620

Rack travel in m: 10.50...10.60 3rd pressure hPa : 1020

Rack travel in m: 11.90...12.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500 Speed rpm : 750

Del.quantity cm3/: 230.5...236.5

1000 s: (227.5...239.5)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 124.0...128.0 1000 s: (122.0...130.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50

rpm : 1095...1105 Speed

STARTING FUEL DELIVERY

Speed rpm

Del.quantity cm3/: 35.0...125.0

1000 s: (80.0...130.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400

Rack travel in mm : 5.40...5.60 Del.guantity cm3/: 24.5...30.5

1000 s: (22.5...32.5)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

: JOHN DEERE # RE46179

Start-of-delivery blocking 8,75° after start of delivery of cylinder no. 1.

Starting/full-load transition speed from holding magnet = 450 1/min.

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in

full-load delivery with torque-control

spring retainer.

Note remarks

Test sheet : DEE

Edition : 15.06.93

Replaces

Test oil : ISO-4113

Combination no. : 0 402 776 812

Injection pump

Pump designation : PES6P120A720RS7255

: 0 412 726 881 EP type number

Governor

Governor design. : RSV400...1050P0A547

: 0 421 833 410 Governer no.

Customer-spec. information

Customer : JOHN DEERE

: 6101 AF010 Engine

1st version kW : 225.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 079

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 140...150

Test nozzle holder

: 1 688 901 101 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00X3.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 3.55...3.65 : (3.50...3.70) Prestroke mm

Rack travel in mm : 9.00...12.00

: 1-5- 3- 6- 2- 4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 20.6...20.8

100 s: (20.3...21.1)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 400.0

Rack travel in mm : 5.5...5.7 Del.quantity cm3/ : 2.6...3.2 100 s: (2.4...3.4)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 1500

: 206.0...208.0 Del.quantity

1000 : (203.0...211.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

B17

Control Lever

position degrees: 44...52

Testina:

1st rack travel in: 10.70

Speed rpm : 1095...1105 2nd rack travel in: 4.00

Speed rpm : 1165...1175

3rd rack travel in: 4.00

rpm : 1165...1195 Speed

4th rack travel in: 1300

rpm : 0.30...1.40 Speed

LOW IDLE 1

Control lever

position degrees: 23...31

Setting point w/out bumper spring

rom : 400 Rack travel in mm: 5.1

Testina:

Speed rpm : 100

Minimum rack trave: 19.00 rpm : 400 Speed

Rack travel in mm : 5.50...5.70

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 11.70...11.80

2nd speed rpm : 750

Rack travel in m: 12.20...12.40

Aneroid/Altitude

Compensator Test

1st version

Setting

: 500 Speed rom

Pressure hPa : 1500

Rack travel mm : 11.70...11.80

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.60...9.80

2nd pressure hPa : 560

Rack travel in m: 10.40...10.50

3rd pressure hPa : 925

Rack travel in m: 11.60...12.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500

Speed rom : 750 Del.guantity cm3/: 213.0...219.0

1000 s: (210.0...222.0)

Ameroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 125.0...129.0

1000 s: (123.0...131.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.70

rpm : 1095...1105 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Dei.quantity cm3/: 85.0...125.0

1000 s: (80.0...130.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

: 400 Speed rom

Rack travel in mm : 5.50...5.70

Del.quantity cm3/: 26.5...32.5

1000 s: (24.5...34.5)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

: JOHN DEERE # RE42225

Start-of-delivery blocking 8,75° after start of delivery of cylinder no. 1.

Starting/full-load transition speed from holding magnet = 450 1/min.

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS BEGINNING OF DELIVERY Test pressure, bar: 22...24 Note remarks Prestroke mm : 2.85...2.95 Test sheet : NAV : (2.80...3.00) Edition : 15.06.93 Rack travel in mm : 9.00...12.00 Replaces : 1-5-3-6-2-4 Firing order Test oil : ISO-4113 Combination no. : 0 402 776 813 Phasing : 0-60-120-180-240-300 Injection pump Pump designation : PES6P120A320LS7285 Tolerance $+ - ^{\circ} : 0.50 (0.75)$ EP type number : 0 412 726 892 Governor Time to cyl. no. : 1 Governor design. : RSV350...750P4A563 Governer no. : 0 421 833 411 BASIC SETTING Customer-spec. information 1st speed rpm: 700 Customer : NAVISTAR Rack travel in mm: 12.40...12.50 Engine : DTA-531 Del.quantity cm3/: 22.5...22.7 1st version kw : 231.0 Rated speed : 1500 100 s: (22.2...23.0) TEST BENCH REQUIREMENTS cm3 : 0.5Spread Test oil 100 s: (0.9) inlet temp. °C : 38...42 2nd speed rpm : 350.0 Overflow valve Rack travel in mm: 4.9...5.1 : 2 417 413 076 Del.quantity cm3/: 1.2...1.8 100 s: (1.0...2.0) Inlet press., bar : 2.80 Spread cm3 : 0.8100 s: (1.2) Overflow quantity min. 1/h: 170...190 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -1 assembly rpm : 800 : 1 688 901 101 Speed Rack travel in mm : 0.30...0.70 Opening pressure, bar : 207...210 Governor spring pre-tension Click setting x : 3.00Orifice plate diameter mm : 0,6 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Test lines : 1 680 750 008 Speed rpm : 700 : 225.0...227.0 Del.quantity Outside diameter 1000 : (222.0...230.0) x Wall thickness Spread cm3 : 5.00 x Length mm : 6.00x2.00x600

1000 : (9.00)

Socition degrees: 35...43

RATED SPEED

1st version

Natrol lever

B19

(A) Injection pump setting values

per values _

Insp. values in parentheses Set equal delivery quant.

Testing:

1st rack travel in: 11.40

rpm : 765...775 Speed

2nd rack travel in: 4.00

Speed rpm : 800...810

3rd rack travel in: 4.00

rpm : 805...815 Speed

4th rack travel in: 850

Speed rom : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 14...22

Setting point w/out bumper spring

rpm : 350 Speed Rack travel in mm: 5.0

Testing:

rpm : 100 Speed Minimum rack trave: 19.00

Speed rpm : 350 Rack travel in mm : 4.90...5.10

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.40

rpm : 765...775 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 165.0...205.0 1000 s: (160.0...210.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350

Rack travel in mm : 4.90...5.10

Del.quantity cm3/: 12.0...18.0 1000 s: (10.0...20.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

: NAVISTAR #1820275c91

Setting and blocking of pointer of

start-of-delivery sensor on cyl. 1

start of delivery

Delivery-valve spring pre-tension =

6.30...6.40 mm.

Permissible alteration from 6.00...6.70

mm

APPLICATION

Generator

B20

Note remarks

Test sheet : NAV

Edition : 15.06.93

Replaces

Test oil : ISO-4113

Combination no. : 0 402 776 813B

Injection pump

Pump designation : PES6P120A320LS7285

EP type number : 0 412 726 892

Governor

Governor design. : RSV350...750P4A563

: DTA-531

Governer no. : 0 421 833 411

: 1820275c91B Cust. part no.

Customer-spec. information Customer : NAVISTAR

1st version kW : 221.0 : 1500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

Engine

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 076

Inlet press., bar: 2.80

Overflow

quantity min. 1/h: 170...190

Test nozzle holder

assembly : 1 688 901 101

Openina .

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

: 2.85...2.95 Prestroke mm

: (2.80...3.90)

Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 11.30...11.40

Del.quantity cm3/: 18.5...18.7

100 s: (18.2...19.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0Rack travel in mm: 4.9...5.1

Del.quantity cm3/: 1.2...1.8

100 s: (1.0...2.0)

cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

: 185.5...187.5 Del.quantity

1000 : (182.5...190.5)

Spread : 5.00 cm3

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 41...49

Testing:

1st rack travel in: 10.30

rpm : 910...920 Speed

2nd rack travel in: 4.00

rpm : 940...950 Speed

3rd rack travel in: 4.00

rpm : 945...955 Speed

4th rack travel in: 1000

: 0.00...1.00 Speed rpm

LOW IDLE 1

Control lever

position degrees: 14...22

Setting point w/out bumper spring

rpm : 350

Rack travel in mm: 5.0

Testing:

: 100 Speed rpm

Minimum rack trave: 19.00

: 350 Speed rpm

Rack travel in mm : 4.90...5.10

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.30

Speed rpm : 910...920

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 165.0...205.0

1000 s: (160.0...210.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350 Rack travel in mm : 4.90...5.10

Del.quantity cm3/ : 12.0...18.0

1000 s: (10.0...20.0)

Spread cm3 : 8.00

1000 s: (12.00)

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

Delivery-valve spring pre-tension =

6.30...6.40 mm.

Permissible alteration from 6.00...6.70

APPLICATION

Generator

822

Note remarks

Test sheet : NAV

Edition : 15.06.93

Replaces : -

Test oil : ISO-4113

Combination no. : 0 402 776 8130

Injection pump

Pump designation : PES6P120A320LS7285

EP type number : 0 412 726 892

Governor

Governor design. : RSV350...750P4A563

Governer no. : 0 421 833 411

Cust. part no. : 18202750910

Customer—spec. information Customer : NAVISTAR

Engine : DTA-531

1st version kW : 201.8 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 076

Inlet press., bar: 2.80

Overflow

quantity min. 1/h: 170...190

Test nozzle holder

assembly : 1 688 901 101

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 2.85...2.95

: (2.80...3.00)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 10.70...10.89

Del.quantity cm3/: 17.0...17.2

100 s: (16.7...17.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 4.9...5.1 Del.quantity cm3/: 1.2...1.8

100 s: (1.0...2.0)

Spread cm3: 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 850

Del.quantity : 170.5...172.5

1000 : (167.5...175.5)

Spread cm3 : 5.00 1000 : (9.00) RATED SPEED 1st version

Control lever position degrees: 41...49

Testing:

1st rack travel in: 9.70 rpm : 910...920 Speed

2nd rack travel in: 4.00 rpm : 940...950 Speed 3rd rack travel in: 4.00 rpm : 945...955 Speed

4th rack travel in: 1000 Speed rom : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 14...22 Setting point w/out bumper spring

rpm : 350 Speed Rack travel in mm: 5.0

Testing:

Speed : 100 rpm Minimum rack trave: 19.00 : 350 rpin

Rack travel in mm : 4.90...5.10

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.70 Speed rom : 910...920

STARTING FUEL DELIVERY

Speed : 100 rom

Del.quantity cm3/: 165.0...205.0

1000 s: (160.0...210.0) Rack travel in mm : 19.00...21.00

LOW IDLE

: 350 Speed rpm

Rack travel in mm : 4.90...5.10 Del.quantity cm3/: 12.0...18.0 1000 s: (10.0...20.0)

cm3 : 8.00

Spread 1000 s: (12.00)

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

Delivery-valve spring pre-tension =

6.30...6.40 mm. Permissible alteration from 6.00...6.70

APPLICATION

Generator

B24

Note remarks

Test sheet

: NAV Edition : 15.06.93

Replaces

Test oil : ISO-4113

Combination no. : 0 402 776 813b

Injection pump

Pump designation : PES6P120A320LS7285

: 0 412 726 892 EP type number

Governor

Governor design. : RSV350...750P4A563

Governer no. : 0 421 833 411

Cust. part no. : 1820275¢91b

Customer-spec. information Customer : NAVISTAR

Engine : DTA-531

1st version kW : 208.0 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 076

Inlet press., bar : 2.80

Overflow

quantity min. 1/h: 170...190

Test nozzle holder

assembly : 1 688 901 101

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

: 2.85...2.95 Prestroke mm

: (2.80...3.00)

Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm: 11.30...11.40

Del.quantity cm3/: 19.8...20.0

100 s: (19.5...20.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm: 4.9...5.1 Del.quantity cm3/: 1.2...1.8

100 s: (1.0...2.0)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

198.0...200.0 Del.quantity

1000 : (195.0...203.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 35...43

Testina:

1st rack travel in: 10.30 Speed rpm : 765...775 2nd rack travel in: 4.00

Speed rpm: 790...800 3rd rack travel in: 4.00

Speed rpm : 795...805 4th rack travel in: 850

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 14...22

Setting point w/out bumper spring

Speed rpm : 350 Rack travel in mm : 5.0

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm : 350

Rack travel in mm : 4.90...5.10

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.30 Speed rpm : 765...775

STARTING FUEL DELIVERY

Speed rpm: 100

Del.quantity cm3/: 165.0...205.0

1000 s: (160.0...210.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm: 350

Rack travel in mm : 4.90...5.10 Del.quantity cm3/ : 12.0...18.0

1000 s: (10.0...20.0)

Spread cm3 : 8.00 1000 s: (12.00)

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

Delivery-valve spring pre-tension =

6.30...6.40 mm.
Permissible alteration from 6.00...6.70

APPLICATION

Generator

B26

Note remarks

Test sheet

: NAV

Edition

: 15.06.93

Replaces

Test oil

: ISO-4113

Combination no.

: 0 402 776 813E

Injection pump

Pump designation : PES6P120A320LS7285

EP type number

: 0 412 726 892

Governor

Governor design. : RSV350...750P4A563

Governer no.

: 0 421 833 411

Cust. part no.

: 1820275C91E

Customer

Customer-spec. information

: NAVISTAR

Engine

: DTA-531

1st version kW

: 185.0

Rated speed

: 1500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 2 417 413 076

Inlet press., bar: 2.80

Overflow

quantity min. 1/h: 170...190

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines

: 1 680 750 008

Outside diameter

x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm

: 2.85...2.95

: (2.80...3.00)

Rack travel in mm : 9.00...12.00

Firing order

: 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - *

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 700

Rack travel in mm : 10.70...10.80

Del.quantity cm3/: 18.2...18.4

100 s: (17.9...18.7)

Spread

cm3 : 0.5

100 s: (0.9)

2nd speed

rpm : 350.0

Rack travel in mm: 4.9...5.1

Del.quantity cm3/: 1.2...1.8

100 s: (1.0...2.0)

Spread

cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

Cm3

1st version

Speed

rpm : 700

Del.quantity

: 182.5...184.5 1000 : (179.5...187.5)

: 5.00

Spread

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 34...42

Testing:

1st rack travel in: 9.70 \$peed rpm : 765...775 2nd rack travel in: 4.00

rpm : 790...800 Speed 3rd rack travel in: 4.00

rpm : 795...805 Speed

4th rack travel in: 850

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 14...22

Setting point w/out bumper spring

rpm : 350 Rack travel in mm: 5.0

Testing:

rpm : 100 Speed Minimum rack trave: 19.00 rpm : 350

Rack travel in mm : 4.90...5.10

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.70 Speed rpm : 765...775

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/ : 165.0...205.0 1000 s: (160.0...210.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350

Rack travel in mm : 4.90...5.10 Del.quantity cm3/: 12.0...18.0

1000 s: (10.0...20.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

Delivery-valve spring pre-tension =

6.30...6.40 mm. Permissible alteration from 6.00...6.70

APPLICATION

Generator

B28

Note remarks

Test sheet

: NAV

Edition

: 15.06.93

Replaces

Test oil

: ISO-4113

Combination no.

: 0 402 776 814

Injection pump

Pump designation : PES6P120A320LS7285

EP type number

: 0 412 726 892

Governor

Governor design. : RSV350...1000P4A564

Governer no.

: 0 421 833 413

Customer

Customer-spec. information : NAVISTAR

Engine

: DTA-531

1st version kW

Rated speed

: 224.0

: 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 2 417 413 076

Inlet press., bar: 2.80

Overflow

quantity min. 1/h: 170...190

Test nozzle holder

assembly

: 1 688 901 101

Openina .

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,6

Test lines

: 1 680 750 008

Outside diameter

x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm

: 2.85...2.95

: (2.80...3.00)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 1000

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 20.0...20.2

100 s: (19.7...20.5)

Spread

Spread

cm3 : 0.5

100 s: (0.9)

2nd speed

rpm : 350.0

Rack travel in mm : 5.8...6.D Del.quantity cm3/ : 2.9...3.5

100 s: (2.7...3.7)

cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Spread

rpm : 1000 Aneroid pressure h: 1500

Del.quantity

: 200.0...202.0

1000 : (197.0...205.0)

cm3

: 5.00

1000 : (9.00)

RATED SPEED

1st version

Control Lever

position degrees: 51...59

Testina:

1st rack travel in: 11.80

rpm : 1050...1060 Speed

2nd rack travel in: 4.00

rpm : 1095...1105 Speed

3rd rack travel in: 4.00

rpm : 1100...1110 Speed

4th rack travel in: 1150

rem : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 19...27

Setting point w/out bumper spring

: 350 rpm

Rack travel in mm: 5.9

Testina:

Speed rpm : 100

Minimum rack trave: 19.00

rpm : 350 Speed

Rack travel in mm : 5.80...6.00

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rom : 1000

Pressure hPa : 1500

: 12.80...12.90 Rack travel mm

Measurement

Speed 1/min : 1000

1st pressure hPa : -

Rack travel in m: 7.40...7.80

2nd pressure hPa : 430

Rack travel in m: 8.90...9.00

3rd pressure hPa : 930

Rack travel in m: 11.30...11.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 85.5...89.5 1000 s: (83.5...91.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80

rpm : 1050...1060 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 165.0...205.0 1000 s: (160.0...210.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

rpm : 350 Speed

Rack travel in mm : 5.80...6.00

Del.quantity cm3/: 29.5...35.5 1000 s: (27.5...37.5)

cm3 : 8.00Spread

1000 s: (12.00)

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

Delivery-valve spring pre-tension =

6.30...6.40 mm.

Permissible alteration from 6.00...6.70

Note remarks

Test sheet

: NAV

Edition

: 15.06.93

Replaces

Test oil

: ISO-4113

Combination no. : 0 402 776 814A

Injection pump

Pump designation : PES6P120A320LS7285

EP type number

: 0 412 726 892

Governor

Governor design. : RSV350...1000P4A564

Governer no.

: 0 421 833 413

Cust, part no.

: 1821048c91A

Customer

Customer-spec. information

Engine

: NAVISTAR

: DTA-531

1st version kW

: 205.0

Rated speed

: 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 2 417 413 076

Inlet press., bar: 2.80

Overflow

quantity min. 1/h: 170...190

Test nozzle holder

: 1 688 901 101 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test Lines

: 1 680 750 008

Outside diameter

x Wall thickness

x Length mm

: 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm

: 2.85...2.95

: (2.80...3.00)

Rack travel in mm : 9.00...12.00

Firing order

: 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 1000

Rack travel in mm : 11.90...12.00

Del.quantity cm3/: 17.7...17.9

100 s: (17.4...18.2)

cm3 : 0.5

100 s: (0.9)

rpm : 350.0

Rack travel in mm: 5.8...6.0

Del.quantity cm3/: 2.9...3.5

100 s: (2.7...3.7)

Spread

2nd speed

Spread

cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1000

Aneroid pressure h: 1500

: 177.0...179.0

Del.quantity 1000 cm3

: (174.0...182.0)

: 5.00

Spread

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 51...59

Testina:

1st rack travel in: 10.90

rpm : 1055...1065 Speed

2nd rack travel in: 4.00

rpm : 1095...1105 Speed

3rd rack travel in: 4.00

rpm : 1100...1110 Speed

4th rack travel in: 1150

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 19...27

Setting point w/out bumper spring

rpni : 350 Speed Rack travel in num: 5.9

Testing:

Speed : 100 rpm Minimum rack trave: 19.00

rpm : 350 Rack travel in mm : 5.80...6.00

Aneroid/Altitude Compensator Test

1st version

Setting

: 1000 Speed rpm hPa : 1500 Pressure

Rack travel mm : 12.80...12.90

Measurement

Speed 1/min: 1000

1st pressure hPa : -

Rack travel in m: 7.40...7.80

2nd pressure hPa : 400

Rack travel in m: 8.70...8.90

3rd pressure hPa : 800

Rack travel in m: 10.60...11.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm_ : 500 Speed

Del.quantity cm3/: 85.5...89.5

1000 s: (83.5...91.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.90

rpm : 1055...1065 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 165.0...205.0

1000 s: (160.0...210.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.80...6.00
Del.quantity cm3/ : 29.5...35.5
1000 s: (27.5...37.5)

Spread cm3 : 8.00

1000 s: (12.00)

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

Delivery-valve spring pre-tension =

6.30...6.40 mm.

Permissible alteration from 6.00...6.70

Note remarks

Test sheet : NAV

Edition : 15.06.93

Replaces

Test oil : ISO-4113

Combination no. : 0 402 776 814B

Injection pump

Pump designation : PES6P120A320LS7285

EP type number : 0 412 726 892

Governor

Governor design. : RSV350...1000P4A564

Governer no. : 0 421 833 413

: 1821048C91B Cust. part no.

Customer-spec. information Customer : NAVISTAR

: DTA-531 Engine

1st version kW : 186.5 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 076

Inlet press., bar: 2.80

Overflow

quantity min. 1/h: 170...190

Test nozzle holder

assembly : 1 688 901 101

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 2.85...2.95

: (2.80...3.00) Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 15.8...16.0

100 s: (15.5...16.3)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 5.8...6.0

Del.quantity cm3/: 2.9...3.5 100 s: (2.7...3.7)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION Control-Lever position

Degree: -1

008 : man

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1500

Del.quantity : 150.0...163.0)

Spread : 5.00

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 51...59

Testing:

1st rack travel in: 10.10

rpm : 1055...1065 Speed

2nd rack travel in: 4.00

rpm : 1095...1105 Speed

3rd rack travel in: 4.00

rpm : 1100...1110 Speed

4th rack travel in: 1150

rom : 0.00...1.00Speed

LOW IDLE 1

Control lever

position degrees: 19...27

Setting point w/out bumper spring

rom : 350

Rack travel in mm: 5.9

Testing:

Speed : 100 rom Minimum rack trave: 19.00

rpm : 350

Rack travel in mm : 5.80...6.00

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 1000 rpm

Pressure hPa : 1500

Rack travel nm : 12.80...12.90

Measurement

1/min: 1000 Speed

1st pressure hPa : -Rack travel in m: 7.40...7.80

2nd pressure hPa : 360

Rack travel in m: 8.50...8.60

3rd pressure hPa : 680

Rack travel in m: 10.00...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 85.5...89.5

1000 s: (83.5...91.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10

Speed rpm : 1055...1065

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 165.0...205.0 1000 s: (160.0...210.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350

Rack travel in mm : 5.80...6.00

Del.quantity cm3/: 29.5...35.5 1000 s: (27.5...37.5)

cm3 : 8.00 Spread

1000 s: (12.00)

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

Delivery-valve spring pre-tension =

6.30...6.40 mm.

Permissible alteration from 6.00...6.70

BOSCH INJ. PUMP TEST SPECIFICATIONS BEGINNING OF DELIVERY Test pressure, bar: 27...29 Note remarks : 3.55...3.65 : (3.50...3.70) Prestroke mm Test sheet : DEE Edition : 15.06.93 Rack travel in mm : 9.00...12.00 Replaces Firing order : 1-5-3-6-2-4 Test oil : ISO-4113 Combination no. : 0 402 776 815 Phasing : 0-60-120-180-240-300 Injection ound Pump designation : PES6P120A720RS7255 Tolerance $+ - ^{\circ} : 0.50 (0.75)$ EP type number : 0 412 726 881 Governor Time to cyl. no. : 1 Governor design. : RSV400...900P7A569 : 0 421 833 418 Governer no. BASIC SETTING Customer-spec. information 1st speed rpm: 850 Customer : JOHN DEERE Rack travel in mm : 14.90...15.00 Engine : 6101 AF010 Del.guantity cm3/: 30.9...31.1 1st version kW : 285.0 Rated speed : 1800 100 s: (30.6...31.4) TEST BENCH REQUIREMENTS Spread cm3 : 0.5Test oil 100 s: (0.9) inlet temp. °C : 38...42 rpm : 400.0 2nd speed Overflow valve Rack travel in mm: 5.4...5.6 : 2 417 413 079 Del.quantity cm3/ : 2.6...3.2 100 s: (2.4...3.4) Inlet press., bar: 1.50 Spread cm3 : 0.8100 s: (1.2) Overflow quantity min. 1/h: 140...150 GUIDE SLEEVE POSITION Control-Lever position Test nozzle holder Degree: -3 : 1 688 901 101 assembly rpm : 800 Speed Rack travel in mm : 0.30...0.70 Opening pressure, bar : 207...210 Governor spring pre-tension Click setting x : 5.00Orifice plate diameter mm : 0,6 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Test lines : 1 680 750 015 Speed rpm : 850 Del.quantity : 309.5...314.5) Outside diameter x Wall thickness : 5.00 Spread cm3 x Length mm : 6.00x3.00x600 1000 : (9.00) (A) Injection pump setting values RATED SPEED Insp. values in parentheses Set equal delivery quant. 1st version

Control lever

position degrees: 56...64

per values ____

Testing:

1st rack travel in: 14.10 rpm : 895...905 Speed 2nd rack travel in: 4.00

rpm : 950...960 Speed

3rd rack travel in: 4.00 rpm : 965...995 Speed 4th rack travel in: 1050

Speed rpm : 0.30...1.40

LOW IDLE 1 Control Lever

position degrees: 29...37

Setting point w/out bumper spring

rpm : 400 Speed Rack travel in mm: 5.0

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm : 400

Rack travel in mm: : 5.40...5.60

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 14.10 rpm : 895...905 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 85.0...125.0

1000 s: (80.0...130.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

rpm : 400 Speed

Rack travel in mm : 5.40...5.60 Del.quantity cm3/: 26.0...32.0 1000 s: (24.0...34.0)

Spread cm3 : 8.001000 s: (12.00)

Remarks:

: JOHN DEERE # RE42226

Start-of-delivery blocking 8,75° after start of delivery of cylinder no. 1.

Starting/full-load transition speed from holding magnet = 450 1/min.

APPLICATION

Generator

CO8

Note remarks

: DEE Test sheet Edition : 15.06.93

Replaces

Test oil : ISO-4113

Combination no. : 0 402 776 816

Injection pump

Pump designation: PES6P120A720RS7255 : 0 412 726 881

EP type number

Governor

Governor design. : RSV400...1050POA547

: D 421 833 419 Governer no.

Customer-spec. information

Customer : JOHN DEERE

: 6101 HF010 Engine

: 280.0 1st version kW Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 079

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 140...150

Test nozzle holder

: 1 688 901 101 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X3.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65

: (3.50...3.70) Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 13.70...13.80

Del.quantity cm3/: 26.1...26.3

100 s: (25.8...26.6)

cm3 : 0.5 Spread

100 s: (0.9)

rpm : 400.02nd speed

Rack travel in mm: 5.6...5.8

Del.quantity cm3/: 2.9...3.5 100 s: (2.7...3.7)

cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rom : 1050 Aneroid pressure h: 1500

Del.quantity : 261.5...263.5

1000 : (258.5...266.5)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Control lever position degrees: 40...48 Testina: 1st rack travel in: 12.70 Speed rpm : 1095...1105 2nd rack travel in: 4.00 Speed rpm : 1155...1165 3rd rack travel in: 4.00 rpm : 1155...1185 Speed 4th rack travel in: 1250 Speed rpm : 0.30...1.40LOW IDLE 1 Control lever position degrees: 17...25 Setting point w/out bumper spring rpm : 400 Rack travel in mm: 5.2 Testing: Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm : 400 Rack travel in mm : 5.60...5.80 TORQUE CONTROL Torque control curve - 1st version rpm : 1050 1st speed Rack travel in m: 13.70...13.80 rpm : 850 2nd speed Rack travel in m: 14.00...14.20 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 COM hPa : 1500 Pressure Rack travel mm : 14.00...14.20 Measurement 1/min: 500 Speed 1st pressure hPa : -

Rack travel in m: 9.70...9.90

2nd pressure hPa : 600

Rack travel in m: 10.90...11.00

3rd pressure hPa : 1060

Rack travel in m: 12,70...13.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500 Speed rpm : 850 Del.quantity am3/: 276.0...282.0 1000 s: (273.0...285.0)

Aneroid pressure h: -Speed rpm : 500

Del.quantity cm3/ : 132.5...136.5

1000 s: (130.5...138.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.70

Speed rpm : 1095...1105

STARTING FUEL DELIVERY

Speed rpm: 100

Del.quantity cm3/: 85.0...125.0

1000 s: (80.0...130.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400

Rack travel in mm : 5.60...5.80 Del.quantity cm3/ : 29.0...35.0

1000 s: (27.0...37.0)

Spread cm3: 8.00

1000 s: (12.00)

Remarks:

: JOHN DEERE # RE46178 Start-of-delivery blocking 8,75° after

start of delivery of cylinder no. 1.

Starting/full-load transition speed from holding magnet = 450 1/min.

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Note remarks

Test sheet Edition

: MB6,1I

Replaces

: 21.05.92 : 03.92

Test oil

: ISO-4113

Combination no.

: 0 403 246 031

Injection pump

Pump designation : PES6MW100/720RS1515

EP type number

: 0 413 206 013

Governor

Governor design. : RQV300...1300MW125-1

Governer no.

: 0 420 083 258

Customer

Customer-spec. information : MB-NFZ

Erigine

: 0M366i_A

1st version kW

: 127.0

Rated speed

: 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 0 631 343 009

Opening

pressure, bar

: 172...175

Test lines

: 1 680 750 089

Outside diameter

x Wall thickness

x Length mm

: 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm

: 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 21.00...0.00

C11

Firing order

: 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

BASIC SETTING

1st speed

rpm: 1300

Rack travel in mm : 11.50...11.60

Del.quantity cm3/: 9.6...9.8

100 s: (9.4...10.0)

Spread

cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm: 4.2...4.4

Del.quantity cm3/: 1.0...1.4

Spread

100 s: (0.7...1.6) cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 1350 1st speed

: 8.00...8.40 travel mm

rpm : 960 2nd speed

travel mm : 5.40...5.60

3rd speed rpm : 600

: 3.20...3.80 travel mm

4th speed rpm : 300

: 0.90...1.30 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1380

Speed Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1300

Aneroid pressure h: 1000

cm3 : 3.50

1000 : (6.00)

RATED SPEED

Spread

1st version Control lever position degrees: 108...116 Testing: 1st rack travel in: 10.50 Speed rpm: 1340...1350 2nd rack travel in: 4.00 rpm : 1430...1460 Speed 4th rack travel in: 1550 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 68...76 Setting point w/out bumper spring rpn : 300 Rack travel in mm: 4.3 Testina: Speed rpm : 200 Minimum rack trave: 5.00 Speed rpm : 300 Rack travel in mm : 4.20...4.40 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm Pressure hPa : --Rack travel mm : 8.90...9.10 Measurement $1/\min : 500$ Speed 1st pressure hPa : 300 Rack travel in m: 9.40...9.60 2nd pressure hPa : 500 Rack travel in m: 11.10...11.30 3rd pressure hPa : 1000 Rack travel in m: 11.50...11.60 START CUT-OUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 : 750 Speed rpm Del.quantity cm3/: 89.0...92.0 1000 s: (86.5...94.5) cm3 : 5.00Spread 1000 s: (7.0) Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 35.0...37.0 1000 s: (33.0...39.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.50 Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 115.0...125.0 1000 s: (112.0...128.0)

LOW IDLE

1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Test pressure, bar: 30...32 Note remarks : 3.25...3.35 Prestroke mm : (3.20...3.40) Rack travel in mm : 9.00...12.00 Test sheet : NAV Edition : 01.03.93 Firing order : 1-5-3-6-2-4 Replaces : 08.92 Test oil : ISO-4113 Combination no. : 0 403 446 239AA : 0-60-120-180-240-300 Phasing Phasing Injection pump Tolerance + - ° : 0.50 (0.75) Pump designation : PES6MW100/320RS1189 EP type number : 0 413 406 177 Time to cyl. no. : 1 Governor Governor design. : RQV350...1200MW46-21 BASIC SETTING Governer no. : 0 420 083 201 1st speed rpm : 1200Cust. part no. : 1819901091 Rack travel in mm : 12.60...12.70 Customer-spec. information Customer : NAVISTAR Del.quantity cm3/: 13.2...13.6 Engine : DTA-466 100 s: (12.9...13.9) 1st version kW : 186.0 Spread cm3 : 0.6 Rated speed : 2400 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 350.02nd speed Test oil Rack travel in mm: 5.2...5.4 inlet temp. °C : 38...42 Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.2) Overflow valve cm3 : 0.3 Spread : 2 417 413 038 100 s: (0.5) Inlet press., bar: 2.80 (B) Setting of injection pump with governor Test nozzle holder assembly : 1 688 901 101 GUIDE SLEEVE TRAVEL 1st speed rpm : 1450 **Opening** : 9.80...10.20 travel mm pressure, bar : 207...210 rpm : 1250 2nd speed : 7.90...8.10 travel mm Orifice plate rpm : 550 3rd speed diameter mm : 0,6 : 3.10...3.70 travel mm rpm : 350 4th speed : 1.30...1.70 travel mm Test lines : 1 680 750 008 FULL LOAD DELIV. AT FULL LOAD STOP Outside diameter x Wall thickness 1st version x Length mm : 6.00x2.00x600 Speed rpm : 1200 Aneroid pressure h: 1200 (A) Injection pump setting values Del.quantity : 132.5...136.5 1000 : (129.5...139.5) Insp. values in parentheses Set equal delivery quant. : 6.00 Spread cm3 per values 1000 : (9.00) BEGINNING OF DELIVERY RATED SPEED

1st version Control lever

position degrees: 104...112

Testing:

1st rack travel in: 11.60

Speed rpm: 1285...1305 2nd rack travel in: 4.00

rpm : 1415...1425 Speed

4th rack travel in: 1550

rpm : 0.00...1.00Speed

LOW IDLE 1

Control lever

position degrees: 66...74

Setting point w/out bumper spring

rpm Rack travel in mm: 5.3

Testing:

Speed : 100 rom Minimum rack trave: 9.00

Speed rpm : 350 Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

Speed rpm : 300...450

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed riom Pressure hPa : -

: 9.20...9.30 Rack travel mm

Measurement

Speed 1/min: 500

1st pressure hPa : 250

Rack travel in m: 10.00...10.10

2nd pressure hPa : 560

Rack travel in m: 11.40...11.80

3rd pressure hPa : 1200

Rack travel in m: 12.60...12.70

START CUT-OUT

1/min: 280 (290) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 Speed rom : 800

Del.quantity cm3/: 135.5...137.5

1000 s: (132.5...140.5)

cm3 : 4.00Spread

1000 s: (7.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 71.5...73.5 1000 s: (69.5...75.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.60

rpm : 1285...1305 Speed

STARTING FUEL DELIVERY

Speed : 100 ripni

Del.quantity cm3/: 150.0...190.0 1000 s: (147.0...193.0) Rack travel in mm: 19.00...21.00

LOW IDLE

rpm : 350

Rack travel in mm : 5.20...5.40

Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

In unlatched condition, do not operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before shutoff.

Only perform pump setting with original overflow valve without IH hose and

restrictor 1.2 mm diameter.

BOSCH INJ. PUMP TEST SPECIFICATIONS Test pressure, bar: 30...32 : 3.25...3.35 Note remarks Prestroke mm : (3.20...3.40) Test sheet : NAV Rack travel in mm : 9.00...12.00 Edition : 01.03.93 : 1-5-3-6-2-4 Firing order Replaces : 08.92 Test oil : ISO-4113 Combination no. : 0 403 446 254BA Phasing : 0-60-120-180-240-300 Phasing Injection pump Tolerance + - ° : 0.50 (0.75) Pump designation : PES6MW100/320RS1189 EP type number : 0 413 406 177 Time to cyl. no. : 1 Governor Governor design. : RGV350...1200rW46-29 BASIC SETTING : 0 420 083 217 Governer no. 1st speed rpm: 1200 Cust. part no. : 1819902091 Rack travel in mm : 12.60...12.70 Customer-spec. information Customer Del.quantity cm3/: 13.2...13.6 : NAVISTAR Engine : DTA-466 100 s: (12.9...13.9) 1st version kW : 186.0 Spread cm3 : 0.6Rated speed : 240G 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 350.0 Test oil Rack travel in mm : 5.2...5.4 Del.quantity cm3/: 1.6...2.0 inlet temp. °C : 38...42 100 s: (1.3...2.2) Overflow valve Spread cm3 : 0.3: 2 417 413 038 100 s: (0.5) Inlet press., bar: 2.80 (B) Setting of injection pump with governor Test nozzle holder assembly : 1 688 901 101 GUIDE SLEEVE TRAVEL 1st speed rpm : 1450 Opening : 9.80...10.20 travel mm : 207...210 pressure, bar 2nd speed rpm : 1250 : 7.90...8.10 travel mm Orifice plate 3rd speed rpm : 550 : 3.10...3.70 diameter mm : 0,6 travel mm rpm : 350 4th speed : 1.30...1.70 travel mm Test lines : 1 680 750 008 FULL LOAD DELIV. AT FULL LOAD STOP Outside diameter x Wall thickness 1st version x Length mm : 6.00x2.00x600 Speed rpm : 1200 Aneroid pressure h: 1200 (A) Injection pump setting values Del.quantity : 132.5...136.5 1000 : (129.5...139.5) Insp. values in parentheses Set equal delivery quant. : 6.00 Spread cm3 1000 : (9.00) per values BEGINNING OF DELIVERY RATED SPEED

C15

1st version Control Lever position degrees: 104...112 Testina: 1st rack travel in: 11.60 Speed rpm : 1285...1305 2nd rack travel in: 4.00 Speed rpm : 1415...1425 4th rack travel in: 1550 Speed rpm : 0.00...1.00 LOW IDLE 1 Control Lever position degrees: 66...74 Setting point w/out bumper spring rpm : 350 Rack travel in mm: 5.3 Testina: Speed rt xm : 100 Minimum rack trave: 9.00 Speed rpm : 350 Rack travel in mm : 5.20...5.40 CONSTANT REGULATION rpm : 300...450 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm hPa : Pressure Rack travel mm : 9.20...9.30 Measurement 1/min: 500 Speed 1st pressure hPa : 250 Rack travel in m: 10.00...10.10 2nd pressure hPa : 560 Rack travel in m: 11.40...11.80 3rd pressure hPa : 1200 Rack travel in m: 12.60...12.70 START CUT-OUT

Speed 1/min : 280 (290) FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1200 Speed rom : 800

Del.quantity cm3/: 135.5...137.5 1000 s: (132.5...140.5) Spread cm3 : 4.001000 s: (7.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 71.5...73.5 1000 s: (69.5...775.0) 1000 s: (5.00)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.60 rpm : 1285...1305 Speed

STARTING FUEL DELIVERY

rpm Speed : 100 Del.quantity cm3/: 150.0...190.0 1000 s: (147.0...193.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed : 350 man Rack travel in mm : 5.20...5.40 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5)

cm3 : 3.50 1000 s: (5.50) Spread

Remarks:

In unlatched condition, do not operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before shutoff.

Only perform pump setting with original overflow valve without IH hose and restrictor 1.2 mm diameter.

BOSCH INJ. PLMP TEST SPECIFICATIONS Prestroke mm : 3.80...3.90 : (3.75...3.95) Note remarks Rack travel in mm : 13.00...0.00 Firing order : 1-5-3-6-2-4 Test sheet : 01.03.93 Edition Replaces Test oil : ISO-4113 Phasina : 0-60-120-180-240-300 Combination no. : 0 403 446 315 Tolerance + - ° : 0.50 (0.75) Injection pump BASIC SETTING Pump designation : PES6MW100/320LS1230 EP type number : 0 413 406 222 1st speed rpm: 950 Governor Governor design. : RQ275/950MW130 Rack travel in mm : 13.10...13.20 Governer no. : 0 420 082 071 Del.quantity cm3/: 13.0...13.2 Customer-spec. information Customer : RBOS-HU 100 s: (12.7...13.5) : D10UTS150 Engine cm3 : 0.4Spread : 150.0 1st version kW 100 s: (0.7) : 1900 Rated speed 2nd speed rpm : 275.0 Rack travel in mm : 7.8...8.0 TEST BENCH REQUIREMENTS Del.quantity cm3/: 1.5...1.9 Test oil 100 s: (1.2...2.1) inlet temp. °C : 38...42 Spread cm3 : 0.3100 s: (0.5) Overflow valve : 1 417 413 047 (B) Setting of injection pump with governor Inlet press., bar: 1.50 GUIDE SLEEVE TRAVEL Test nozzle holder rpm : 10501st speed assembly : 1 688 901 101 travel mm : 7.70...8.30 rpm : 1010 2nd speed Opening travel mm : 6.30...6.50 : 207...210 pressure, bar 3rd speed rpm : 700 travel mm : 5.80...6.20 Orifice plate : 385 4th speed rpm diameter mm : 0,6 : 4.00...4.40 travel mm 5th speed rpm : 275 : 1.80...2.00 travel mm Test Lines : 1 680 750 008 GUIDE SLEEVE POSITION Outside diameter Control-lever position x Wall thickness Degree: 108 x Length mm : 6.00x2.00x600 rpm : 700 Speed Rack travel in mm : 19.20...20.80 (A) Injection pump setting values Insp. values in parentheses FULL LOAD DELIV. AT FULL LOAD STOP Set equal delivery quant. per values ____ 1st version Speed rpm : 950 BEGINNING OF DELIVERY Aneroid pressure h: 800 Test pressure, bar: 30...32 Del.quantity : 130.0...132.0

1000 : (127.0...135.0)

Spread

cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 90...98

Setting point:

Speed rpm : 700 Rack travel in mm: 20.0

Testing:

1st rack travel in: 12.10 Speed rpm : 1005...1020

2nd rack travel in: 4.00

Speed rpm : 1070...1100

4th rack travel in: 1200

Speed rpm : 0.10...1.00

LOW IDLE 1

control lever

position degrees: 70...78

Setting point w/out bumper spring

Speed rpm : 275 Rack travel in mm : 7.9

Testing:

Speed rpm : 150 Minimum rack trave: 9.50

Speed rpm : 275 Rack travel in mm : 7.80...8.00

Aneroid/Altitude Compensator Test

1st version Setting

Speed rpm : 500 Pressure hPa : 310 Rack travel mm : 12.80...12.90

Measurement

Speed $1/\min : 500$

1st pressure hPa : 800

Rack travel in m: 13.10...13.20

2nd pressure hPa : -

Rack travel in m: 11.00...11.10 3rd pressure hPa : 310

Rack travel in m: 12.80...12.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed

rpm : 500

Del.quantity cm3/: 95.0...97.0

1000 s: (93.0...99.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.10

rpm : 1005...1020 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 160.0...180.0

1000 s: (157.0...183.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 7.80...8.00

Del.quantity cm3/: 15.0...19.0 1000 s: (12.5...21.5)

cm3 : 3.50 Spread

1000 s: (5.50)

Remarks:

Check electrically unlatched starting

fuel delivery (EES) with 24 volt.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 7,3 D 1 Edition : 01.03.93

Replaces : 10.91 Test oil : ISO-4113

Combination no. : 0 403 456 116

Injection pump

Pump designation : PES6MW100/321RS1215

EP type number : 0 413 406 205

Governor

Governor design. : RQ250/1200MW84-8 : 0 420 082 063 Governer no.

Customer-spec. information : MAN Customer

Engine : D 0826 LF 04

1st version kW : 199.0 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 13.60...13.70

Del.quantity cm3/: 16.7...16.9

100 s: (16.4...17.2)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 250.0 2nd speed Rack travel in mm: 5.5...5.7

Del.quantity cm3/: 2.1...2.5 100 s: (1.8...2.7)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1320

: 9.30...9.70 travel mm

2nd speed rpm : 1255

: 6.50...6.70 travel mm

3rd speed rpm : 360

: 3.90...4.50 travel mm

rpm : 250 4th speed

: 1.60...2.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: 108

rpm : 600 Speed

Rack travel in mm: 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1200

Del.quantity : 167.5...169.5 1000 : (164.5...172.5)

: 4.00 Spread cm3

1000 : (7.50)

RATED SPEED 1st version Control lever position degrees: 91...99 Setting point: Speed rpm : 600 Rack travel in mm : 20.0 Testing: 1st rack travel in: 12.60 rpm : 1245...1260 Speed 2nd rack travel in: 4.00 rpm : 1340...1370 Speed 4th rack travel in: 1400 rpm : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 67...75 Setting point w/out bumper spring : 250 mari Rack travel in mm: 5.6 Testing: Speed rpm : 150 Minimum rack trave: 7.50 : 250 mari Rack travel in mm : 5.50...5.70 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 man hPa : 200 Pressure Rack travel mm : 10.00...10.10 Measurement $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 9.50...9.60 2nd pressure hPa : 700 Rack travel in m: 12.30...12.60 3rd pressure hPa : 1200 Rack travel in m: 13.60...13.70 FUEL DELIVERY CHARACTERISTICS 1st version

Spread cm3 : 6.001000 s: (9.0) Aneroid pressure h: 1200 : 800 Speed rpm Del.quantity cm3/: 167.0...171.0 1000 s: (164.0...174.0) Aneroid pressure h: 1200 Speed rpm : 1200 Del.quantity cm3/ : 163.0...167.0 1000 s: (160.0...170.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 77.0...79.0 1000 s: (75.0...81.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.60 Speed rpm : 1245...1260 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 70.0...90.0 1000 s: (67.0...93.0) LOW IDLE Speed rpm : 250
Rack travel in mm : 5.50...5.70
Del.quantity cm3/ : 21.0...25.0
1000 s: (18.5...27.5) Spread cm3 : 3.501000 s: (5.50) Remarks: : MAN #3-7137 Start-of-delivery mark is at start of delivery of cylinder 1

Aneroid pressure h: 1200

rpm Del.quantity cm3/: 174.0...178.0

: 600

1000 s: (171.0...181.0)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 7,3 D 2 Edition : 01.03.93 Replaces : 10.91

Test oil : ISO-4113

Combination no. : 0 403 456 117

Injection pump

Pump designation : PES6MW100/321RS1215

EP type number : 0 413 406 205

Governor

Governor design. : RQV250...1200MW83-2

: 0 420 083 216 Governer no.

Customer-spec. information Customer : MAN

Engine : D 0826 LF 04

1st version kW : 199.0 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.50...3.60 Prestroke mm

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 13.60...13.70

Del.quantity cm3/: 16.7...16.9

100 s: (16.4...17.2)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0Rack travel in mm: 5.5...5.7 Del.quantity cm3/: 2.1...2.5

100 s: (1.8...2.7) Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rom : 1250

: 10.60...11.00 travel mm

rpm : 800 2nd speed

travel mm : 5.90...6.10

3rd speed rpm : 450

: 3.20...3.80 rpm : 250 travel mm

4th speed

travel mm : 1.20...1.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000Aneroid pressure h: 1200

: 167.5...169.5 Del.quantity 1000 : (164.5...172.5)

: 4.00 cm3

Spread

1000:(7.50)

RATED SPEED

1st version

Control lever

position degrees: 124...132

Testina: 1st rack travel in: 12.60 : 1250...1260 Speed rpm 2nd rack travel in: 4.00 : 1340...1370 Speed rom 4th rack travel in: 1400 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 67...75 Setting point w/out bumper spring rpm : 250 Rack travel in mm: 5.6 Testing: Speed : 150 rom Minimum rack trave: 7.50 Speed rpm : 250 Rack travel in mm : 5.50...5.70 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rom hPa : 200 Pressure Rack travel mm : 10.00...10.10 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 9.50...9.60 2nd pressure hPa : 700 Rack travel in m: 12.30...12.60 3rd pressure hPa : 1200 Rack travel in m: 13.60...13.70 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 Speed rpm : 600 Del.quantity cm3/: 174.0...178.0 1000 s: (171.0...181.0) Spread cm3: 6.00 1000 s: (9.0) Aneroid pressure h: 1200 Speed : 800 rpm Del.quantity cm3/: 167.0...171.0 1000 s: (164.0...174.0) Aneroid pressure h: 1200 : 1200 Speed rpm Del.quantity cm3/: 163.0...167.0 1000 s: (160.0...170.0) Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 77.0...79.0 1000 s: (75.0...81.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.60 Speed rpm : 1250...1260

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 70.0...90.0 1000 s: (67.0...93.0)

LOW IDLE

1000 s: (5.50)

Remarks:

: MAN #3-7138

Start-of-delivery mark is at start of delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS Test pressure, bar: 30...32 Note remarks : 3.50...3.60 Prestroke mm : (3.45...3.65) Rack travel in mm : 9.00...12.00 Test sheet : CUM : 26.02.93 Edition Firing order : 1-5-3-6-2-4 Replaces : 06.92 Test oil : ISO-4113 Combination no. : 0 403 466 127 Phasing : 0-60-120-180-240-300 Phasina Injection pump Tolerance + - ° : 0.50 (0.75) Pump designation : PES6MW100/120RS1137-Time to cyi. no. : 1 EP type number : 0 413 406 180 Governor BASIC SETTING Governor design. : RSV550...1100MW2A335 1st speed rpm : 1100Governer no. : 0 420 085 185 Rack travel in mm : 14.40...14.50 Customer-spec. information Customer : CUMMINS Del.quantity cm3/: 15.2...15.4 : 6 CTA-8.3 Engine 100 s: (14.9...15.7) 1st version kW : 194.0 Spread cm3 : 0.4Rated speed : 2200 100 s: (0.7) TEST BENCH REQUIREMENTS rpm : 550.0 2nd speed Test oil Rack travel in mm: 6.8...7.2 inlet temp. °C : 38...42 Del.quantity cm3/: 2.2...2.6 100 s: (2.0...2.9) Overflow valve Spread cm3 ; 0.3 : 1 419 992 198 100 s: (0.5) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -3 assembly : 1 688 901 101 Speed rpm: 800 Rack travel in mm: 0.30...1.00 Opening | pressure, bar Governor spring pre-tension : 207...210 Click setting x : 4.00Orifice plate diameter mm : 0,6 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Test Lines : 1 680 750 014 Speed rpm : 1100 Aneroid pressure h: 900 Del.quantity : 132.3...157.5) Outside diameter x Wall thickness x Length mm : 6.00X2.00X600 cm3 : 4.00Spread 1000 : (7.50) (A) Injection pump setting values

RATED SPEED

1st version Control lever

position degrees: 93...101

caz

Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Setting point: Speed rpm Rack travel in mm: 0.6 Testina: 1st rack travel in: 13.40 : 1165...1175 COM 2nd rack travel in: 4.00 : 1240...1250 Speed COM 3rd rack travel in: 4.00 Speed rpm : 1240...1270 4th rack travel in: 1350 rpm : 0.30...1.70Speed LOW IDLE 1 Control lever position degrees: 68...76 Setting point w/out bumper spring rpm : 550 Rack travel in mm: 6.5 l'estina: Speed : 100 rpm Minimum rack trave: 19.00 : 550 Speed man Rack travel in mm : 6.40...6.60 TORQUE CONTROL Torque control curve - 1st version rpm : 1100 1st speed Rack travel in m: 14.40...14.50 rpm : 750 2nd speed Rack travel in m: 15.00...15.20 3rd speed rpm : 1000 Rack travel in m: 15.00...15.20 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm Pressure hPa : 900 Rack travel mm : 15.00...15.20 Measurement Speed $1/\min : 500$

1st pressure hPa : -Rack travel in m: 11.50...11.70 2nd pressure hPa : 400 Rack travel in m: 12.30...12.40 3rd pressure hPa : 630 Rack travel in m: 13.80...14.20 FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 900 : 750 Speed rpm Del.quantity cm3/: 156.0...160.0 1000 s: (153.0...163.0) Spread cm3 : 6.001000 s: (9.0) Aneroid pressure h: -Speed rom : 500 Del.quantity cm3/ : 100.0...102.0 1000 s: (98.0...104.0) BREAKAWAY

1st version 1mm rack travel less than full load rack tr: 13.40

rpm : 1165...1175 Speed

STARTING FUEL DELIVERY

Speed rom : 100 Del.quantity cm3/: 130.0...150.0 1000 s: (127.0...153.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 550 Rack travel in mm : 6.80...7.20 Del.quantity cm3/: 22.5...26.5 1000 s: (20.0...29.0) cm3 : 3.50 1000 s: (5.50) Spread

Remarks:

: CUM #3911657

Start-of-delivery mark 9° cam angle after start of delivery cyl. 1.

Adjust stop lever to 0.5...1.0 mm before stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS Test pressure, bar: 30...32 : 3.50...3.60 : (3.45...3.65) Note remarks Prestroke mm Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-Test sheet : CUM Edition : 26.02.93 Replaces : 06.92 Test oil : ISO-4113 Combination no. : 0 403 466 128 Phasing : 0-60-120-180-240-300 Phasing Injection pump Tolerance + - " : 0.50 (0.75) Pump designation: PES6MW100/120RS1137-Time to cyl. no. : 1 EP type number : 0 413 406 180 Governor BASIC SETTING Governor design. : RSV550...1100Mw2A335 1st speed rpm: 1100 : 0 420 085 196 Saverner no. Rack travel in mm : 13.30...13.40 Customer-spec, information Customer : CUMMINS Del.quantity cm3/: 14.0...14.2 : 6 CTA-8.3 Engine 100 s: (13.7...14.5) 1st version kW : 176.0 Spread cm3 : 0.4Rated speed : 2200 100 s: (0.7) TEST BENCH REQUIREMENTS 2nd speed rpm : 550.0 Rack travel in mm : 7.0...7.4 Test oil inlet temp. °C : 38...42 Del.quantity cm3/: 2.8...3.2 100 s: (2.6...3.5) Overflow valve cm3 : 0.3Spread : 1 419 992 198 100 s: (0.5) GUIDE SLEEVE POSITION Inlet press., bar: 1.50 Control-lever position Test nozzle holder Degree: -3 : 1 688 901 101 assembly rpm : 800 Rack travel in mm : 0.30...1.00 **Opening** pressure, bar : 207...210 Governor spring pre-tension Click setting x : 4.00Orifice plate diameter mm. : 0,6 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Test Lines : 1 680 750 014 Speed rpm : 1100 Aneroid pressure h: 1000 Del.quantity : 140.0...145.0) Outside diameter x Wall thickness x Length mm : 6.00x2.00x600 : 4.00 1000 : (7.50) (A) Injection pump setting values Insp. values in parentheses RATED SPEED Set equal delivery quant.

> 1st version Control lever

position degrees: 90...98

per values

BEGINNING OF DELIVERY

Setting point: Speed r pm Rack travel in mm: 0.6 Testing: 1st rack travel in: 12.30 : 1165...1175 Speed man 2nd rack travel in: 4.00 Speed mom . : 1240...1250 3rd rack travel in: 4.00 Speed rpm : 1240...1270 4th rack travel in: 1350 Speed rpm : 0.30...1.70LOW IDLE 1 Control lever position degrees: 68...76 Setting point w/out bumper spring rpm : 550 Rack travel in mm: 6.7 Testina: Speed : 100 rpm Minimum rack trave: 19.00 Speed : 550 rpm Rack travel in mm : 6.60...6.80 TORQUE CONTROL Torque control curve - 1st version rpm : 1100 1st speed Rack travel in m: 13.30...13.40 2nd speed rpm : 750 Rack travel in m: 14.00...14.10 3rd speed rpm : 1000 Rack travel in m: 14.00...14.10 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm Pressure hPa : 1000 Rack travel mm : 14.00...14.10 Measurement $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 10.10...10.20

1st version Aneroid pressure h: 1000 Speed : 800 rom Del.quantity cm3/: 152.0...156.0 1000 s: (149.0...159.0) Spread cm3 : 6.001000 s: (9.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 80.0...82.0 1000 s: (78.0...84.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.30 rom: 1165...1175 Speed STARTING FUEL DELIVERY Speed mari : 100 Del.quantity cm3/: 130.0...150.0 1000 s: (127.0...153.0) Rack travel in mm : 19.00...21.00 LOW IDLE Speed rpm : 550 Rack travel in mm : 7.00...7.40 Del.quantity cm3/: 28.5...32.5 1000 s: (26.0...35.G) Spread cm3 : 3.50 1000 s: (5.50) Remarks: : CUM #3921691 Start-of-delivery mark at 10° cam rotation angle after start of delivery, cylinder 1 Adjust stop lever to 0.5...1.0 mm before stop.

2nd pressure hPa : 450

3rd pressure hPa : 675

Rack travel in m: 11.00...11.10

Rack travel in m: 12.80...13.20

FUEL DELIVERY CHARACTERISTICS

BOSCH INJ. PUMP TEST SPECIFICATIONS Test pressure, bar: 30...32 Prestroke mm : 3.50...3.60 Note remarks : (3.45...3.65) Test sheet : CUM Rack travel in mm : 9.00...12.00 : 26.02.93 Edition : 1-5-3-6-2-4 Firing order : 02.93 Replaces Test oil : ISO-4113 Combination no. : 0 403 466 130 Phasing : 0-60-120-180-240-300 Phasina Injection pump Tolerance + - ° : 0.50 (0.75) Pump designation : PES6MW100/120RS1137-Time to cyl. no. : 1 EP type number : 0 413 406 180 Governor BASIC SETTING Governor design. : RSV550...1100MW2A335 rpm: 1100 1st speed : C 420 085 206 Governer no. Rack travel in mm : 14.40...14.50 Customer-spec. information : CUMMINS Del.guantity cm3/: 15.2...15.4 Customer : 6 CTA 100 s: (14.9...15.7) Engine : 179.0 1st version kW cm3 : 0.4Spread : 2200 Rated speed 100 s: (0.7) TEST BENCH REQUIREMENTS rpm : 550.0 2nd speed Test oil Rack travel in mm: 6.8...7.1 inlet temp. "C : 38...42 Del.quantity cm3/: 2.2...2.6 100 s: (2.0...2.9) Overflow valve cm3 : 0.3Spread · 1 417 413 047 100 s: (0.5) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -3 : 1 688 901 101 assembly Speed rpm : 800 Rack travel in mm : 0.30...1.00 Open ind : 207...210 pressure, bar Governor spring pre-tension Click setting x : 4.00 Orifice plate : 0,6 diameter mm FULL LOAD DELIV. AT FULL LOAD STOP 1st version : 1 680 750 014 Test lines Speed rpm : 1100Aneroid pressure h: 900 Outside diameter Del.quantity : 152.5...154.5 1000 : (149.5...157.5) x Wall thickness : 6.00x2.00x600 : 4.00 x Lenath mm cm3 Spread 1000 : (7.50) (A) Injection pump setting values Insp. values in parentheses RATED SPEED Set equal delivery quant. per values 1st version Control lever BEGINNING OF DELIVERY position degrees: 93...101

C27

Setting point:

rpm : 800 Rack travel in mm: 0.6

Testing:

1st rack travel in: 13.40

rpm : 1165...1175 Speed

2nd rack travel in: 4.00

rpm : 1240...1250 Speed

3rd rack travel in: 4.00

rpm : 1240...1270 Speed

4th rack travel in: 1350

Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 68...76

Setting point w/out bumper spring

CDW Speed : 550

Rack travel in mm: 6.5

Testina:

Speed : 100 (IDI) Minimum rack trave: 19.00

rpm : 550 Speed

Rack travel in mm : 6.40...6.60

Aneroid/Altitude

Compensator Test

1st version

Setting

: 500 Speed rom Pressure hPa : 900

Rack travel mm : 14.40...14.50

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 11.50...11.70

2nd pressure hPa : 400

Rack travel in m: 12.30...12.40

3rd pressure hPa : 630

Rack travel in m: 13.80...14.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 100.0...102.0

1000 s: (98.0...104.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.40

Speed rpm : 1165...1175

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 130.0...150.0

1000 s: (127.0...153.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 550

Rack travel in mm : 6.80...7.10

Del.quantity cm3/: 22.5...26.5

1000 s: (20.0...29.0)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

: CUM #3925266

Start-of-delivery mark 9° cam angle after start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS : 3.60...3.70 : (3.55...3.75) Prestroke mm Note remarks Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order Test sheet : MB : 05.03.93 Edition Replaces : 03.92 Test oil : ISO-4113 : 0-60-120-180-240-300 Phasina Combination no. : 0 403 476 113 Tolerance + - ° : 0.50 (0.75) Injection pump BASIC SETTING Pump designation : PES6MW100/720RS1131-1st speed rpm: 1200 EP type number : 0 413 406 165 Governor Rack travel in mm : 11.00...11.20 Governor design. : RSV350...1200Mw0A342 Del.quantity cm3/ : 7.6...7.8 : 0 420 085 187 Governer no. 100 s: (7.4...8.0) Customer-spec. information Customer : MB-NF7 Spread cm3 : 0.3Engine : OM 366 LA 100 s: (0.6) 1st version kW : 132.0 2nd speed rpm : 350.0Rated speed : 2400 Rack travel in mm: 5.5...6.0 Del.quantity cm3/: 0.9...1.3 TEST BENCH REQUIREMENTS 100 s: (0.6...1.5) cm3 : 0.3Spread Test oil 100 s: (0.5) inlet temp. °C : 38...42 GUIDE SLEEVE POSITION Overflow valve Control-lever position : 1 419 992 198 Degree: -3 rpm : 800 Speed Rack travel in mm : 0.30...1.00 Inlet press., bar: 1.50 Test nozzle holder Governor spring pre-tension : 0 681 343 009 assembly Click setting x : 3.00Openina FULL LOAD DELIV. AT FULL LOAD STOP pressure, bar : 172...175 1st version Speed rpm : 1200 Aneroid pressure h: 700 Test Lines : 1 680 750 089 : 76.0...78.0 Del.quantity Outside diameter 1000 : (74.0...80.0) x Wall thickness : 3.50 Spread cm3 x Length mm : 8.00x2.50x600 1000 : (6.00)(A) Injection pump setting values RATED SPEED Insp. values in parentheses Set equal delivery quant. 1st version per values ___ Control lever position degrees: 96...104 BEGINNING OF DELIVERY Test pressure, bar: 30...32 Setting point: Speed : 800 rpm

Rack travel in mm: 0.6

Testing: 1st rack travel in: 10.10 rpm : 1240...1245 * 2nd rack travel in: 4.00 : 1280...1293 Speed rpm 3rd rack travel in: 4.00 Speed rpm : 1300...1330 4th rack travel in: 1450 rpm : 0.30...1.70 5th rack travel in: 1240...1255 Speed rpm : 10.10LOW IDLE ? Setting point w/out bumper spring rpm Rack travel in mm: 5.7 Testing: Speed rpm : 100 Minimum rack trave: 19.00 : 350 Speed rpm Rack travel in mm : 5.50...6.00 Rack travel in mm: 2.00 Speed : 400...460 rpm TORQUE CONTROL Dimension a mm : 1.10 Torque control curve - 1st version rpm : 1200 1st speed Rack travel in m: 11.00...11.20 2nd speed rpm : 500 Rack travel in m: 12.20...12.40 3rd speed rpm : 500 Rack travel in m: 12.00...12.20 4th speed rpm : 1000 Rack travel in m: 11.40...11.60 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rom Pressure hPa : -Rack travel mm : 10.10...10.30 Measurement 1/min: 500 Speed 1st pressure hPa : 200
Rack travel in m: 11.00...11.20
2nd pressure hPa : 300
Rack travel in m: 11.60...11.80 3rd pressure hPa : 700 Rack travel in m: 12.10...12.30 FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 500
Del.quantity cm3/: 70.0..73.0
1000 s: (67.5...75.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: Speed rpm : 500
Del.quantity cm3/: 36.0..38.0
1000 s: (34.0..40.0)

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 100.0...110.0 1000 s: (97.0...113.0)

LOW IDLE

Remarks:

* Read off speed set under 1. Add 40...48 min-1 to this speed. The control-rod travel under 2. must be attained with the calculated speed profile.

Test hydr. locking device for starting with 800...1200 hPa air pressure.

Set pneumatic shutoff device to control-rod stop = 0.5...1.5 mm control-rod travel at 4.5 bar atmospheric pressure.

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 3.60...3.70 : (3.55...3.75) Note remarks Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Test sheet : MB Edition : 26.02.93 Replaces : 08.92 Test oil : ISO-4113 Phasina : 0-60-120-180-240-300 Combination no. : 0 403 476 114 Tolerance + - ° : 0.50 (0.75) Injection pump BASIC SETTING Pump designation : PES6MW100/720RS1131-1st speed rpm: 1080 EP type number : 0 413 406 165 Governor Rack travel in mm : 13.00...13.10 : RSV550...1100MW0A325 Governor design. Del.quantity cm3/: 10.3...10.5 Governer no. : 0 420 085 188 100 s: (10.1...10.7) Customer-spec. information Customer : MB-NFZ Spread cm3 : 0.3Engine : 0M366LA 100 s: (0.6) 1st version kW : 170.0 rpm : 550.0 2nd speed Rack travel in mm : 5.8...6.3 Del.quantity cm3/ : 1.0...1.4 Rated speed : 2200 TEST BENCH REQUIREMENTS 100 s: (0.7...1.6) cm3 : 0.3 Spread Test oil 100 s: (0.5) inlet temp. °C : 38...42 GUIDE SLEEVE POSITION Overflow valve Control-Lever position : 1 419 992 198 Degree: -3 Speed rpm : 800 Rack travel in mm : 0.30...1.00 Inlet press., bar: 1.50 Test nozzle holder FULL LOAD DELIV. AT FULL LOAD STOP assembly : 0 681 343 009 1st version Opening rpm : 1080 Speed pressure, bar : 172...175 : 103.0...105.0 Del.quantity 1000 : (101.0...107.0) : 3.50 Spread cm3 Test Lines : 1 680 750 089 1000 : (6.00) Outside diameter RATED SPEED x Wall thickness : 8.00x2.50x600 x Length mm 1st version Control lever (A) Injection pump setting values position degrees: 82...90 Insp. values in parentheses Set equal delivery quant. Setting point: per values ___ Speed rpm : 800 Rack travel in mm: 0.6 BEGINNING OF DELIVERY Test pressure, bar: 30...32 Testing: 1st rack travel in: 12.0

rpm : 1120...1125 *

2nd rack travel in: 4.00

Speed rpm : 1145...1158

4th rack travel in: 1550

Speed rpm : 0.30...1.70

LOW IDLE 1 Control lever

position degrees: 70...78
Setting point w/out bumper spring

Speed rpm : 550 Rack travel in mm : 6.0

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm : 550

Rack travel in mm : 5.80...6.30

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1080

Rack travel in m: 13.00...13.10

2nd speed rpm : 750

Rack travel in m: 13.90...14.00

3rd speed rpm : 925

Rack travel in m: 13.40...13.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm: 750

Del.quantity cm3/: 108.0...111.0

1000 s: (105.5...113.5)

Spread cm3 : 5.00

1000 s: (7.0)

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 100.0...110.0

1000 s: (97.0...113.0)

LOW IDLE

Speed rpm: 550

Rack travel in mm : 5.80...6.30 Del.quantity cm3/: 10.0...14.0

1000 s: (7.5...16.5)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

Test hydr. locking device for starting

004

with 500...1000 hPa air pressure.

* Read off speed set under 1. Add 25...33 min-1 to this speed. The control-rod travel under 2. must be attained with the calculated speed profile.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MAN Edition : 05.03.93 Replaces Test oil : ISO-4113 Combination no. : 0 403 486 105 Injection pump Pump designation : PES6MW100/321RS1231 EP type number : 0 413 406 225 Governor Governor design. : RSV300...1100Mw0A343 Governer no. : 0 420 085 209 Customer-spec. information Customer : DO826LE 522 Engine 1st version kW : 154.0 : 2200 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening pressure, bar : 172...175 Test lines : 1 680 750 003 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____ BEGINNING OF DELIVERY

Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) BASIC SETTING rpm: 1100 1st speed Rack travel in mm : 12.00...12.10 Del.quantity cm3/: 14.2...14.4 100 s: (13.9...14.7) Spread cm3 : 0.4100 s: (0.7) 2nd speed rpm : 300.0 Rack travel in mm : 5.0...5.2 Del.quantity cm3/ : 0.9...1.3 100 s: (0.6...1.5) cm3 : 0.3Spread 100 s: (0.5) GUIDE SLEEVE POSITION Control-Lever position Degree: -3 Speed rpm: 800 Rack travel in mm: 0.30...1.00 Governor spring pre-tension Click setting x : 4.00FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1100 Aneroid pressure h: 1000 Del.quantity : 142.0...147.0) cm3 : 4.00 1000 : (7.50) RATED SPEED 1st version Control Lever position degrees: 90...98 Setting point: Speed rpm Rack travel in mm: 0.6

Testing:

Prestroke mm

Test pressure, bar: 30...32

: 3.50...3.60

: (3.45...3.65)

1st rack travel in: 11.00 rpm : 1150...1160 Speed 2nd rack travel in: 4.00 rpm : 1230...1260 Speed 4th rack travel in: 1350 Speed rpm : 0.30...1.70 LOW IDLE 1 Control Lever position degrees: 64...72 Setting point w/out bumper spring rpm Rack travel in mm: 5.1 Testing: Speed rpm : 100 Minimum rack trave: 19.00 rpm Speed : 300 Rack travel in mm : 5.00...5.20 SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00 TORQUE CONTROL Torque control curve - 1st version rpm : 1100 1st speed Rack travel in m: 12.00...12.10 rpm : 800 2nd speed Rack travel in m: 12.30...12.40 3rd speed rpm : 600 Rack travel in m: 12.30...12.50 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rom hPa : 1000 Pressure Rack travel mm : 12.00...12.10 Measurement Speed 1/min: 500 1st pressure hPa : -Rack travel in m: 9.40...9.50 2nd pressure hPa : 150 Rack travel in m: 9.70...9.80 3rd pressure hPa : 600 Rack travel in m: 11.60...11.90 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 rpm : 800 Speed Del.quantity cm3/: 144.0...148.0 1000 s: (141.0...151.0)

Spread cm3 : 6.001000 s: (9.0) Aneroid pressure h: 1000 Speed rpm : 600 Del.quantity cm3/: 142.0...146.0 1000 s: (139.0...149.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 75.0...77.0 1000 s: (73.0...79.0) BREAKAWAY 1st version 1mm rack travel less than

rpm : 1150...1160 Speed STARTING FUEL DELIVERY

full load rack tr: 11.00

Speed rpm : 100

Del.quantity cm3/: 120.0...130.0 1000 s: (117.0...133.0)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 5.00...5.20 Del.quantity cm3/: 9.0...13.0 1000 s: (6.5...15.5) cm3 : 3.50

Spread 1000 s: (5.50)

Remarks:

: MAN #3-7263

Start-of-delivery mark is at start of delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1-5-3-6-2-4 Note remarks Test sheet : SNF Phasing : 0-60-120-180-240-300 Edition : 26.02.93 Replaces Tolerance + - ° : 0.50 (0.75)Test oil : ISO-4113 BASIC SETTING Combination no. : 0 403 546 021 1st speed rpm: 1200 Injection pump Pump designation: PE6MW100/720RS1229 Rack travel in mm : 14.40...14.50 : 0 413 506 108 EP type number Governor Del.quantity cm3/: 15.1...15.3 Governor design. : RQV250...1200Mw93-3 : 0 420 083 287 Governer no. 100 s: (14.8...15.6) Customer-spec. information Spread cm3 : 0.4Customer : SNF 100 s: (0.7) : WD 612.95 Engine 2nd speed rpm : 250.01st version kW : 191.0 Rack travel in mm: 9.1...9.3 Del.quantity cm3/: 1.8...2.2 Rated speed : 2400 100 s: (1.5...2.4) TEST BENCH REQUIREMENTS Spread cm3 : 0.3100 s: (0.5) Test oil inlet temp. °C : 38...42 (B) Setting of injection pump with governor Overflow valve : 1 457 413 010 GUIDE SLEEVE TRAVEL 1st speed rpm : 1250 : 8.20...8.60 Inlet press., bar: 1.50 travel mm rpm : 1050 2nd speed Test nozzle holder travel mm : 6.30...6.50 assembly : 0 681 343 009 3rd speed rpm : 500 travel mm : 2.70...3.30 **Opening** : 250 4th speed rpm pressure, bar : 172...175 : 0.80...1.20 travel mm FULL LOAD DELIV. AT FULL LOAD STOP Test lines : 1 680 750 014 1st version Outside diameter Speed rpm : 1200 x Wall thickness Aneroid pressure h: 1200 : 6.00x2.00x600 x Length mm : 151.0...153.0 Del.quantity 1000 : (148.0...156.0) (A) Injection pump setting values Spread cm3 : 4.00 Insp. values in parentheses 1000 : (7.50) Set equal delivery quant. per values ____ RATED SPEED BEGINNING OF DELIVERY 1st version Test pressure, bar: 30...32 Control lever position degrees: 108...116 Prestroke mm : 3.60...3.70 : (3.55...3.75) Testing: Rack travel in mm : 9.00...12.00 1st rack travel in: 13.60

007

Speed rpm: 1240...1250 2nd rack travel in: 4.00 Speed rpm : 1325...1355 4th rack travel in: 1400 rom : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 74...82 Setting point w/out bumper spring rpm : 250 Rack travel in mm: 9.2 Testing: Speed : 150 **CDM** Minimum rack trave: 10.00 rpm : 250 Rack travel in mm: 9.10...9.30 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rom hPa : 1200 Pressure Rack travel mm : 14.40...14.50 Measurement Speed $1/\min : 500$ 1st pressure hPa : -Rack travel in m: 12.00...12.10 2nd pressure hPa : 600 Rack travel in m: 12.50...12.60 3rd pressure hPa : 800 Rack travel in m: 13.50...13.80 START CUT-OUT 1/min: 180 (200) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 Speed : 700 rpm Del.quantity cm3/: 157.0...161.0 1000 s: (154.0...164.0) cm3 : 6.00 Spread 1000 s: (9.0 Aneroid pressure h: -: 500 Speed rpm Del.quantity cm3/: 98.0...100.0 1000 s: (96.0...102.0)

1st version 1mm rack travel less than full load rack tr: 13.60 rpm : 1240...1250 Speed STARTING FUEL DELIVERY Speed : 100 rpm Del.guantity cm3/: 130.0...140.0 1000 s: (127.0...143.0) LOW IDLE Speed rpm Rack travel in mm : 9.10...9.30 Del.quantity cm3/: 18.0...22.0 1000 s: (15.5...24.5) cm3 : 3.50Spread 1000 s: (5.50) Remarks:

BREAKAWAY

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : KHD Edition : 21.09.92 Replaces Test oil : ISO-4113 Combination no. : 0 403 548 027AG Injection pump Pump designation : PE8MW100/720LS1173 EP type number : 0 413 508 108 Governor Governor design. : RQV300...1150MW99 Governer no. : 0 420 083 163 Customer-spec, information : KHD Customer : F8L513 Engine 1st version kW : 163.0 : 2300 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 419 992 198 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 Opening | : 172...175 pressure, bar Test lines : 1 680 740 014 Outside diameter x Wall thickness : 6.00X2.00X600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 30...32 Prestroke mm : 3.10...3.20 : (3.05...3.25) Rack travel in mm : 9.00...12.00 009

: 1-8-7-2-6-5-Firing order : 0-45-90-135-180-225-Phasina 270-315 : 0.50 (0.75) Tolerance + - ° BASIC SETTING 1st speed rpm: 1150 Rack travel in mm: 10.30...10.40 Del.quantity cm3/: 8.9...9.1 100 s: (8.7...9.3) cm3 : 0.3Spread 100 s: (0.6) rpm : 300.02nd speed Rack travel in mm: 4.9...5.1 Del.quantity cm3/: 1.1...1.5 100 s: (0.8...1.7) cm3 : 0.3Spread 100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 1280: 11.10...11.50 travel mm rpm : 1190 2nd speed travel mm : 10.10...10.30 3rd speed : 400 rpm : 2.90...3.50 travel mm : 300 4th speed rpm : 2.20...2.60 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1200 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1150 Speed Del.quantity : 89.0...91.0 1000 : (87.0...93.0) : 3.50 Spread cm3 1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 45...53

Testing:

1st rack travel in: 9.30

rpm : 1190...1200 Speed

2nd rack travel in: 3.50

rpm : 1275...1305 Speed

4th rack travel in: 1370

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 13...21

Setting point w/out bumper spring

rpm : 300 Rack travel in mm: 5.0

Testing:

Speed rpm : 100 Minimum rack trave: 6.50 : 300 rpm

Rack travel in mm : 4.90...5.10

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 10.30...10.40

rpm : 650 2nd speed

Rack travel in m: 10.60...10.70

rpm : 1000 3rd speed

Rack travel in m: 10.50...10.60

START CUT-OUT

1/min : 220 (250) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650

Del.quantity cm3/: 82.5...85.5 1000 s: (80.0...88.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.30

Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 135.0...155.0

1000 s: (132.0...158.0)

LOW IDLE

rpm : 300 Speed

Rack travel in mm : 4.90...5.10

Del.quantity cm3/: 11.0...15.0 1000 s: (8.5...17.5) Spread cm3: 3.50

1000 s: (5.50)

Remarks:

010

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet

: KHD

Edition

: 21.09.92

Replaces

Test oil

: ISO-4113

Combination no. : 0 403 548 032AA

Injection pump

Pump designation : PE8MW100/720LS1173

EP type number

: 0 413 508 108

Governor

Governor design: : RQ300/1150MW61-2

Governer no.

: 0 420 082 036

Customer-spec. information Customer

: KHD

Engine

: F8L513

1st version kW

: 168.0

Rated speed

: 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 08...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar

: 172...175

Test lines

: 1 680 740 014

Outside diameter

x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values

Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke nm

: 3.10...3.20

: (3.05...3.25)

Rack travel in mm : 9.00...12.00

D11

Firing order

: 1- 8- 7- 2- 6- 5-

4- 3

Phasing

: 0-45-90-135-180-225-

270-315

Tolerance + - °

: 0.50 (0.75)

BASIC SETTING

1st speed

rpm: 1150

Rack travel in mm : 10.50...10.60

Del.quantity cm3/: 9.3...9.5

100 s: (9.1...9.7)

Spread

cm3 : 0.3

100 s: (0.6)

2nd speed

rpm : 300.0

Rack travel in mm: 4.9...5.1

Del.quantity cm3/: 1.1...1.5

Spread

100 s: (0.8...1.7) cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 1270 1st speed

travel mm

: 3.60...9.00

2nd speed

rpm : 1210

travel mm

: 6.60...6.80

3rd speed

rpm : 420 : 3.50...4.10

travel mm 4th speed

rpm : 300

travel mm

: 1.50...1.90

GUIDE SLEEVE POSITION Control-lever position

Degree: 107

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed

rpm : 1150

Del.quantity

: 93.0...95.0

1000 : (91.0...97.0)

cm3

: 3.50

1000 : (6.00)

RATED SPEED

Spread

1st version Control lever

position degrees: 26...34

Setting point:

: 600 Speed rpm Rack travel in mm: 20.0

Testina:

1st rack travel in: 9.50

Speed rpm : 1190...1205 2nd rack travel in: 3.50

rpm : 1240...1270 Speed

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 8...16

Setting point w/out bumper spring

rpm : 300 Rack travel in mm: 5.0

Testing:

: 100 Speed nom Minimum rack trave: 6.50

: 300 Speed rpm

Rack travel in mm : 4.90...5.10

TORQUE CONTROL

Torque control curve - 1st version

rom : 1150 1st speed

Rack travel in m: 10.50...10.60

2nd speed rpm : 650

Rack travel in m: 10.80...10.90

3rd speed rpm : 1000

Rack travel in m: 10.70...10.80

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650 Del.quantity cm3/: 91.5...94.5 1000 s: (89.0...97.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.50 rpm : 1190...1205 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 135.0...155.0

1000 s: (132.0...158.0)

LOW IDLE

rpm : 300 Speed

Rack travel in mm : 4.90...5.10

Del.quantity cm3/: 11.0...15.0 1000 s: (8.5...17.5)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

D12

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : KHD Edition : 21.09.92 Replaces Test oil : ISO-4113 Combination no. : 0 403 548 032AB Injection pump EP type number : 0 413 508 108 Governor Governor design. : RQ300/1150MW61-2 : 0 420 082 036 Governer no. Customer-spec. information Customer : KHD Engine : F8L513 1st version kW : 174.0 Rated speed : 2300 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 419 992 198 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly **Opening** pressure, bar : 172...175 Test lines : 1 680 740 014 Outside diameter x Wall thickness : 6.00x2.00x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

Pump designation : PE8MW100/720LS1173 BEGINNING OF DELIVERY Test pressure, bar: 30...32 Prestroke mm : 3.10...3.20 : (3.05...3.25) Rack travel in mm : 9.00...12.00

Firing order : 1-8-7-2-6-5-4- 3 Phasing : 0-45-90-135-180-225-270-315 Tolerance + - ° : 0.50 (0.75) BASIC SETTING 1st speed rpm: 1150 Rack travel in mm : 10.80...10.90 Del.quantity cm3/: 9.7...9.9 100 s: (9.5...10.1) Spread cm3 : 0.3100 s: (0.6) 2nd speed rpm : 300.0 Rack travel in mm : 4.9...5.1 Del.quantity cm3/ : 1.1...1.5 100 s: (0.8...1.7) Spread cm3 : 0.3100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 1270 travel nm : 8.60...9.00 2nd speed rpm : 1210 travel mm : 6.60...6.80 3rd speed rpm : 420 travel mm : 3.50...4.10 4th speed rpm : 300 travel mm : 1.50...1.90 GUIDE SLEEVE POSITION Control-lever position Degree: 107 rpm : 600 Speed Rack travel in mm : 19.20...20.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1150 Speed : 97.0...99.0 Del.quantity : (95.0...101.0) 1000 : 3.50 Spread cm3 1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 26...34

Setting point:

Speed rpm : 600 Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.80

rpm : 1190...1205 Speed

2nd rack travel in: 3.50

rpm : 1245...1275 Speed

4th rack travel in: 1350

npm : 0.00...1.00Speed

LOW IDLE 1 Control Lever

position degrees: 8...16

Setting point would bumper spring

Speed rpm : 300 Rack travel in mm: 5.0

Testing:

Speed rpm : 100 Minimum rack trave: 6.50 : 300 Speed MOM

Rack travel in mm : 4.90...5.10

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1150 1st speed

Rack travel in m: 10.80...10.90

2nd speed rpm : 650

Rack travel in m: 11.10...11.20 3rd speed rpm : 1000

Rack travel in m: 11.00...11.10

START CUT-OUT

1/min: 220 (250) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650 Del.quantity cm3/ : 96.5...99.5 1000 s: (94.0...102.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.80

rpm : 1190...1205 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 135.0...155.0 1000 s: (132.0...158.0)

LOW IDLE

Speed rpm : 300

Rack travel in mm : 4.90...5.10 Del.quantity cm3/: 11.0...15.0

1000 s: (8.5...17.5)

cm3 : 3.50 Spread

1000 s: (5.50)

Remarks:

D14

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : KHD Edition : 21.09.92 Replaces Test oil : ISO-4113 Combination no. : 0 403 548 032AC Injection pump Pump designation : PE8MW100/720LS1173 EP type number : 0 413 508 108 Governor Governor design. : RQ300/1150MW61-2 : 0 420 082 036 Governer no. Customer-spec. information Customer : KHD Engine : F8L513 1st version kW : 178.0 Rated speed : 2300 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 419 992 198 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Openina pressure, bar : 172...175 Test lines : 1 680 740 014 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values BEGINNING OF DELIVERY Test pressure, bar: 30...32 Prestroke mm : 3.10...3.20 : (3.05...3.25) Rack travel in mm : 9.00...12.00 D15

Firing order : 1-8-7-2-6-5-4- 3 Phasina : 0-45-90-135-180-225-270-315 Tolerance + - ° : 0.50 (0.75) BASIC SETTING rpm: 1150 1st speed Rack travel in mm: 11.00...11.10 Del.quantity cm3/: 9.9...10.1 100 s: (9.7...10.3) cm3 : 0.3Spread 100 s: (0.6) rpm : 300.02nd speed Rack travel in mm: 4.9...5.1 Del.quantity cm3/: 1.1...1.5 100 s: (0.8...1.7) Spread cm3 : 0.3100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 1270 : 8.60...9.00 travel mm rpm : 1210 2nd speed travel mm : 6.60...6.80 3rd speed rpm : 420 travel mm : 3.50...4.10 : 300 4th speed rpm : 1.50...1.90 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: 107 Speed rpm : 600 Rack travel in mm: 19.20...20.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1150 Speed : 99.0...101.0 Del.quantity 1000 : (97.0...103.0) Spread : 3.50 cm3

1000

RATED SPEED

: (6.00)

1st version Control lever

position degrees: 26...34

Setting point:

: 600 Speed Libu Rack travel in mm: 20.0

Testing:

1st rack travel in: 10.00

rpm : 1190...1205

2nd rack travel in: 3.50

rpm : 1245...1275 Speed

4th rack travel in: 1350

rpm : 0.00...1.00Speed

LOW IDLE 1

Control lever

position degrees: 8...16

Setting point w/out bumper spring

rpm : 300 Rack travel in mm: 5.0

Testing:

Speed rpm : 100

Minimum rack trave: 6.50 rpm : 300

Rack travel in mm : 4.90...5.10

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 11.00...11.10

rpm : 650 2nd speed

Rack travel in m: 11.30...11.40 3rd speed rpm : 1000

Rack travel in m: 11.20...11.30

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650

Del.quantity cm3/: 98.5...101.5

1000 s: (96.0...104.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.00

rpm : 1190...1205 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 135.0...155.0 1000 s: (132.0...158.0)

LOW IDLE

rpm : 300 Speed

Rack travel in mm : 4.90...5.10 Del.quantity cm3/: 11.0...15.0 1000 s: (8.5...17.5) Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

016

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM

Edition : 15.06.93

Replaces : -

Test oil : ISO-4113

Combination no. : 9 400 083 423

Injection pump

Pump designation : PES3A80D320/3RS1264

EP type number : 9 400 083 053

Governor

Governor design. : RSV350...900A7C627R

Governer no. : 9 420 083 264

Customer-spec. information

Customer : MWM

Engine : 0225-3

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 003

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.20...2.30

: (2.15...2.35)

Rack travel in mm : 9.00...12.00

Firing order : 1- 2- 3

Phasing : 0-120-240

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack tray. m: 9.00...12.00

& maximum rack tra: 21.00

Difference * CS : 4.00...5.00

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 10.20...10.30

bel.quantity cm3/ : 5.1...5.2

100 s: (5.0...5.4)

Spread cm3 : 0.2

100 s: (0.4)

2nd speed rpm : 350.0

Rack travel in mm : 7.3...7.5

Del.quantity cm3/ : 0.8...1.1

100 s: (0.6...1.3)

Spread cm3: 0.4

100 s: (0.6)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm: 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 6.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 900

Del.quantity : 51.5...52.5

1000 : (50.0...54.0)

Spread cm3 : 2.50

1000 : (4.00)

RATED SPEED

1st version

Control lever

position degrees: 107...115

Testing:

1st rack travel in: 9.20

rpm : 940...945 Speed 2nd rack travel in: 4.00 Speed rpm : 965...978 4th rack travel in: 1100 rpm : 0.30...1.70Speed LOW IDLE 1 Control lever position degrees: 75...83 Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm : 5.5 Testing: Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm : 350
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00 Speed rpm : 420...480 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 900 Rack travel in m: 10.20...10.30 2nd speed rpm : 500 Rack travel in m: 10.20...10.40 5th speed rpm : 400 Rack travel in m: 10.90...11.50 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.20 rpm : 940...945 Speed STARTING FUEL DELIVERY Speed : 100 rpm Rack travel in mm : 19.00...21.00 LOW IDLE : 350 rom Rack travel in mm : 5,90...6.10 Remarks:

APPLICATION

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet

: MWM

Edition

: 15.06.93

Replaces

Test oil

: ISO-4113

Combination no. : 9 400 083 427

Injection pump

Pump designation : PES4A80D320/3RS1265

EP type number

: 9 400 083 055

Governor

Governor design. : RSV350...900A7C627R

: 9 420 083 264 Governer no.

Customer-spec. information

: MWM

Customer

Engine

: D225-4

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 0 681 343 009

Opening

pressure, bar

: 172...175

Test lines

: 1 680 750 003

Outside diameter

x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 2.20...2.30

: (2.15...2.35)

Rack travel in mm : 9.00...12.00

Firing order : 1-3-4-2

D19

Phasing : 0-90-180-270

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00

Difference ° CS : 4.00...5.00

BASIC SETTING

1st speed

rpm: 900

Rack travel in mm : 10.20...10.30

Del.quantity cm3/: 5.1...5.2

100 s: (5.0...5.4)

cm3 : 0.2

100 s: (0.4)

2nd speed

rpm : 350.0

Rack travel in mm: 7.3...7.5

Deliquaritity cm3/: 0.8...1.1 100 s: (0.6...1.3)

Spread

Spread

cm3 : 0.4

100 s: (0.6)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed

rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 6.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 900

Del.quantity

: 51.5...52.5 1000 : (50.0...54.0)

Spread

: 2.50 cm3

1000 : (4.00)

RATED SPEED

1st version

Control lever

position degrees: 107...115

Testing:

1st rack travel in: 9.20

rpm : 940...945 Speed 2nd rack travel in: 4.00 Speed rpm: 965...978 4th rack travel in: 1100 Speed rpm : 0.30...1.70 LOW IDLE 1 Control lever position degrees: 75...83 Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm : 5.5 Testing: rpm : 100 Speed Minimum rack trave: 19.00 rpm : 350 Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 rpm : 420...480 Speed TORQUE CONTROL Torque control curve - 1st version rpm : 900 1st speed Rack travel in m: 10.20...10.30 2nd speed rpm : 500 Rack travel in m: 10.20...10.40 5th speed rpm : 400 Rack travel in m: 10.90...11.50 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.20 Speed rpm : 940...945 STARTING FUEL DELIVERY Speed rpm : 100 Rack travel in mm : 19.00...21.00 LOW IDLE rom : 350 Rack travel in mm : 5.90...6.10 Remarks: **APPLICATION** Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MwM

Edition : 15.06.93

Replaces

Test oil : ISO-4113

Combination no. : 9 400 083 429

Injection pump

Pump designation : PES6A80D320/3RS1261

EP type number : 9 400 083 057

Governor

Governor design. : RSV350...900A7C627R

Governer no. : 9 420 083 264

Customer—spec. information Customer : MWM

Engine : D225-6

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 592 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

Test Lines : 1 680 750 003

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.20...2.30

: (2.15...2.35)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00

Difference ° CS : 4.00...5.00

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 10.20...10.30

Del.quantity cm3/: 5.1...5.2

100 s: (5.0...5.4)

Spread cm3 : 0.2

100 s: (0.4)

2nd speed rpm: 350.0

Rack travel in mm : 7.3...7.5

Del.quantity cm3/: 0.8...1.1

100 s: (0.6...1.3)

Spread cm3 : 0.4

100 s: (0.6)

GUIDE SLEEVE POSITION

Control-Lever position
Degree: -3

Speed rpm: 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 6.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 900

Del.quantity : 51.5...52.5

1000 : (50.0...54.0)

Spread cm3 : 2.50

1000 : (4.00)

RATED SPEED

1st version

Control lever

position degrees: 107...115

Testing:

1st rack travel in: 9.20

rpm : 940...945 Speed 2nd rack travel in: 4.00 rpm : 965...978 beed 4th rack travel in: 1100 Speed rpm : 0.30...1.70 LOW IDLE 1 Control lever position degrees: 75...83 Setting point w/out bumper spring Speed rpm: 350 Rack travel in mm: 5.5 Testing: rpm : 100 Speed Minimum rack trave: 19.00 rpm : 350 Speed Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 Speed rpm : 420...480 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 900 Rack travel in m: 10.20...10.30 2nd speed rpm : 500 Rack travel in m: 10.20...10.40 5th speed rpm : 400 Rack travel in m: 10.90...11.50 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.20 rpm : 940...945 Speed STARTING FUEL DELIVERY rom : 100 Rack travel in mm : 19.00...21.00 LOW IDLE rpm : 350 Speed Rack travel in mm : 5.90...6.10 Remarks:

APPLICATION

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM

Edition : 17.06.93 Replaces : 13.03.92 Test oil : ISO-4113

Combination no. : 9 400 083 449DD

Injection pump

Pump designation : PES6A100D320/3RS2691

EP type number : 9 410 230 025

Governor

Governor design. : RSV400...1100A2C2209

: 9 420 083 201 Governer no.

Cust. part no. : 3354913

Customer-spec. information Customer : CUMMINS

Engine : 6 CT 8.3 L

1st version kW : 129.1 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

0pening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90

: (2.75...2.95) Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00

Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm: 1175

Rack travel in mm : 10.10...10.20

Del.quantity cm3/: 8.7...8.9

100 s: (8.5...9.1)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 400.02nd speed

Rack travel in mm: 5.6...5.8 Del.quantity cm3/: 1.6...2.0

100 s: (1.4...2.3)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1175

Del.quantity : 87.5...89.5

1000 : (85.5...91.5)

: 3.50 Spread cm3 1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 87...95

Testing:

1st rack travel in: 9.10

rpm : 1215...1225 Speed

2nd rack travel in: 4.00

rpm : 1245...1275 Speed

4th rack travel in: 1400

Speed rom : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 62...70

Setting point w/out bumper spring

rpm : 400°

Rack travel in mm: 5.2

Testing:

Speed rpm : 100

Minimum rack trave: 19.00

Speed rpm : 400
Rack travel in mm : 5.60...5.80
Rack travel in mm : 2.00

Speed rpm : 570...630

TORQUE CONTROL

Torque control curve - 1st version

1st speed

st speed rpm : 1175
Rack travel in m: 10.10...10.20
and speed rpm : 500
Rack travel in m: 11.30...11.50

2nd speed

4th speed rpm : 800

Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500

Del.quantity cm3/: 90.5...93.5

1000 s: (88.0...96.0)

Speed rpm : 800 Del.quantity cm3/: 92.5...95.5 1000 s: (90.0...98.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.10

rpm : 1215...1225 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

D24

Del.quantity cm3/: 135.0...149.0 1000 s: (132.0...152.0)

Rack travel in mm: 19.00...21.00

LOW IDLE

Speed rpm : 400

Rack travel in mm : 5.60...5.80

Del.quantity cm3/: 16.5...20.5 1000 s: (14.0...23.0)

Spread

cm3 : 3.50 1000 s: (5.50)

Remarks:

: VERSAO 33

Start-of-delivery mark 11° cam angle

after start of delivery cyl. 1

Note remarks

Test sheet : CUM 5,9 x Edition : 15.06.93 Replaces : 01.93 Test oil : ISO-4113

Combination no. : 9 400 083 459

Injection pump

Pump designation : PES6A95D12DRS2822 EP type number : 9 400 084 029

Governor

: RQV350...1250AB1235 Governor design.

-2R

: 9 420 080 311 Governer no.

Customer-spec. information Customer : CUMMINS

Engine : 6 BT

1st version kW : 119.3 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 2.75...2.85 : (2.70...2.90) Prestroke mm

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasina : 0-60-120-180-240-300

Tolerance ÷ - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00

Difference ° CS : 2.00...3.00

BASIC SETTING

rpm: 1250 1st speed

Rack travel in mm : 12.70...12.80

Del.guantity cm3/ : 8.6...8.8

100 s: (8.4...9.0)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm: 5.0...5.2 Del.quantity cm3/: 0.6...1.0

100 s: (0.4...1.2)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 13001st speed

travel mm : 6.80...6.90

rpm : 350 2nd speed

travel mm : 1.20...1.70

3rd speed rpm : 700

: 4.00...4.50 travel mm

4th speed rpm : 1550

: 8.30...8.80 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1530

Rack travel in mm: 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250 Aneroid pressure h: 600

Del.quantity : 86.0...88.0

1000 : (84.0...90.0)

: 3.50 Spread Σ mo 1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 107...115

Testing:

1st rack travel in: 11.70

rpm : 1310...1320 Speed

2nd rack travel in: 4.00

rpm : 1545...1575 Speed

4th rack travel in: 1750

Speed rom : 0.00...1.00

LOW IDLE 1 control lever

position degrees: 63...71

Testing:

Speed rpm : 100 Minimum rack trave: 7.00 : 350 rpm

Rack travel in mm : 5.00...5.20

CONSTANT REGULATION

Speed rpm : 475...575

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rpm Pressure hPa : 600

: 12.70...12.80 Rack travel mm

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 11.60...11.90

2nd pressure hPa : 320

Rack travel in m: 11.70...11.80

3rd pressure hPa : 410

Rack travel in m: 12.30...12.50

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 600

Speed rpm : 700 Del.quantity cm3/ : 80.0...83.0 1000 s: (77.5...85.5)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 64.0...67.0

1000 s: (62.0...69.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70

rpm : 1310...1320 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Dei.quantity cm3/ : 115.0...135.0 1000 s: (110.0...140.0)

Rack travel in mm: 19.00...21.00

LOW IDLE

Speed rpm : 350

Rack travel in mm : 5.00...5.20 Del.quantity cm3/: 6.0...10.0 1000 s: (4.0...12.0)

cm3 : 3.50Spread

1000 s: (5.50)

Remarks:

: C.D.C. # 3355394

Start-of-delivery mark 9.5° cam angle

after start of delivery cyl. 1

Note remarks

Test sheet : MWM

Edition : 15.06.93

Replaces

; -

Test oil

: 150-4113

Combination no.

: 9 400 085 223

Injection pump

Pump designation : Pl

: PES3A80D32ORS1281

EP type number

: 9 400 083 054

Governor

Governor design.

: RSV350...1400A2C2129

-3R

Governer no.

: 9 420 083 265

Customer-spec. information

Customer

: MWM

Engine

: D 229-3

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening.

pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses

Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.20...2.30

: (2.15...2.35)

Rack travel in mm : 9.00...12.00

Firing order

: 1- 2- 3

Phasing : 0-120-240

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00

Difference ° CS : 4.90...5.00

BASIC SETTING

1st speed rpm: 1400

Rack travel in mm : 9.90...10.00

Del.quantity cm3/ : 5.4...5.5

100 s: (5.3...5.7)

Spread cm3 : 0.2

100 s: (0.4)

2nd speed rpm : 350.0

Rack travel in mm : 6.9...7.1

Del.quantity cm3/ : 0.6...0.9

100 s: (0.4...1.1)

Spread cm3 : 0.4

100 s: (0.6)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1400

Del.guantity : 54.5...55.5

1000 : (53.0...57.0)

Spread cm3 : 2.50

1000 : (4.00)

RATED SPEED

1st version

Control lever

position degrees: 108...116

Testing:

1st rack travel in: 8.90 Speed rpm : 1440...1450 2nd rack travel in: 4.00 Speed rpm : 1495...1525 4th rack travel in: 1700 Speed rpm : 0.30...1.70LOW IDLE 1 Control lever position degrees: 74...82 Setting point w/out bumper spring Rack travel in mm : 6.5 Testing: Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm : 350 Rack travel in mm : 6.90...7.10 Rack travel in mm : 2.00 Speed rpm : 640...700TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1400 Rack travel in m: 9.90...10.00 2nd speed rpm : 500 Rack travel in m: 10.70...10.80 3rd speed rpm: 700 Rack travel in m: 10.60...10.80 4th speed rpm : 1100 Rack travel in m: 10.20...10.50 FUEL DELIVERY CHARACTERISTICS 1st version Speed speed rpm : 500 Del.quantity cm3/: 48.0...51.0 1000 s: (46.5...52.5) rpm : 700 Del.quantity cm3/: 50.5...53.5 1000 s: (49.0...55.0) Speed rpm : 1100 Del.quantity cm3/: 54.5...57.5 1000 s: (53.0...59.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 8.90 Speed rpm : 1440...1450 STARTING FUEL DELIVERY Speed : 100 rpm

028

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.90...7.10
Del.quantity cm3/: 6.5...9.5

1000 s: (4.5...11.5) read cm3 : 4.00

:

Spread cm3 : 4.00 1000 s: (6.00)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4Note remarks Test sheet : MWM **Edition** : 15.06.93 Phasing : 0-60-120-180-240-300 Replaces Test oil : ISO-4113 : 0.50 (0.75) Tolerance + - ° Combination no. : 9 400 085 239 Time to cyl. no. : 1 Injection pump BEGINNING OF DELIVERY DIFFERENCE Pump designation : PES6A90D320RS2701 : 9 400 083 094 EP type number betw. rack trav. m: 9.00...12.00 Governor & maximum rack tra: 21.00 Governor design. : RSV350...1150A2C2097 Difference ° CS : 4.00...5.00 -1R : 9 420 083 267 Governer no. BASIC SETTING Customer-spec. information rpm: 1150 1st speed Customer : MWM Rack travel in mm : 10.80...10.90 Engine : TD229-6 Del.quantity cm3/: 8.1...8.2 : 106.7 1st version kW : 2300 Rated speed 100 s: (7.9...8.4) TEST BENCH REQUIREMENTS Spread cm3 : 0.3Test oil 100 s: (0.7) inlet temp. °C : 38...42 2nd speed rpm : 350.0 Overflow valve Rack travel in mm: 5.3...5.5 : 1 419 992 198 Del.quantity cm3/: 0.8...1.2 100 s: (0.6...1.4) Inlet press., bar: 1.50 cm3 : 0.4Spread 100 s: (0.7) Test nozzle holder : 0 681 343 009 assembly GUIDE SLEEVE POSITION Control-lever position Opening Degree: -3 : 172...175 rpm : 800 pressure, bar Speed Rack travel in mm : 0.30...1.00 Test Lines : 1 680 750 003 Governor spring pre-tension Click setting x : 4.00Outside diameter x Wall thickness FULL LOAD DELIV. AT FULL LOAD STOP x Length mm : 6.00x2.00x600 1st version (A) Injection pump setting values Speed rpm : 1150 : 81.0...82.0 Insp. values in parentheses Del.quantity Set equal delivery quant. 1000 : (79.0...84.0) per values ____ Spread : 3.00 cm3 1000 : (7.00) BEGINNING OF DELIVERY Test pressure, bar: 25...27 RATED SPEED Prestroke mm : 2.65...2.75 1st version : (2.60...2.80)

Control lever position degrees: 93...101 Testina: 1st rack travel in: 9.80 rpm : 1190...1200 Speed 2nd rack travel in: 4.00 Speed rpm : 1240...1270 4th rack travel in: 1400 rpm : 0.30...1.70 Speed LOW IDLE 1 Control lever position degrees: 67...75 Setting point w/out bumper spring rpm : 350 Rack travel in mm: 4.9 Testina: Speed rpm : 100 Minimum rack trave: 19.00 : 350 Speed rpm Rack travel in mm : 5.30...5.50 Rack travel in mm : 2.00 : 535...595 Speed riom TORQUE CONTROL Torque control curve - 1st version rpm : 1150 1st speed Rack travel in m: 10.80...10.90 2nd speed rpm : 500 Rack travel in m: 11.20...11.30 3rd speed rom : 700 Rack travel in m: 11.20...11.30 4th speed rpm : 950 Rack travel in m: 11.00...11.10 FUEL DELIVERY CHARACTERISTICS 1st version : 500 Speed rpm Del.quantity cm3/ : 74.0...77.0 1000 s: (72.0...79.0) Speed rpm : 700 Del.quantity cm3/ : 76.5...79.5 1000 s: (74.5...81.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.80 rpm : 1190...1200 Speed STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 19.00...21.00
LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.30...5.50
Del.quantity cm3/ : 8.0...12.0
1000 s: (6.0...14.0)
Spread cm3 : 4.50
1000 s: (7.00)

Remarks:
: VALMET
APPLICATION

Tractor (tractor engines)

Note remarks

Test sheet

: MWM

Edition

: 15.06.93

Replaces

Test oil

: ISO-4113

Combination no. : 9 400 085 240

Injection pump

Pump designation : PES4A90D320RS2702

EP type number

: 9 400 083 095

Governor

Governor design.

: RSV350...1150A2C2129

-4R

Governer no.

: 9 420 083 268

Customer-spec. information Customer

: MWM

Engine

: D 229-4

1st version kW

: 75.0

Rated speed

: 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 0 681 343 009

Openina

pressure, bar

: 172...175

Test lines

: 1 680 750 003

Outside diameter

x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 2.65...2.75

: (2.60...2.80)

Rack travel in mm : 9.00...12.00

Firing order : 1-3-4-2

Phasing

: 0-90-180-270

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00

Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed

Spread

rpm: 1150

Rack travel in mm : 9.00...9.10

Del.quantity cm3/: 6.3...6.4

100 s: (6.1...6.6)

cm3 : 0.3

100 s: (0.7)

rpm : 350.0 2nd speed

Rack travel in mm : 5.6...5.8

Del.quantity cm3/: 1.0...1.4 100 s: (0.8...1.6)

Spread

cm3 : 0.4100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

rpm:800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1150

Del.quantity

Spread

: 63.5...64.5

1000 : (61.5...66.5)

: 3.00

cm3 1000 : (7.00)

RATED SPEED

1st version

Control lever position degrees: 95...103 Testina: 1st rack travel in: 8.00 Speed rpm : 1190...1200 2nd rack travel in: 4.00 Speed rpm : 1230...1260 4th rack travel in: 1400 rpm : 0.30...1.70 Speed LOW IDLE 1 Control lever position degrees: 70...78 Setting point w/out bumper spring rpm Rack travel in mm: 5.2 Testing: Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm : 350 Rack travel in mm : 5.60...5.80 Rack travel in mm : 2.00 Speed rom : 560...620 TORQUE CONTROL Torque control curve - 1st version rpm : 1150 1st speed Rack travel in m: 9.00...9.10 rom : 500 2nd speed Rack travel in m: 10.10...10.20 3rd speed rpm : 800 Rack travel in m: 9.70...9.90 4th speed rpm : 1000 Rack travel in m: 9.10...9.40 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 500 Del.quantity cm3/ : 60.5...63.5 1000 s: (58.5...65.5) Speed rpm : 800 Del.quantity cm3/: 65.5...68.5 1000 s: (63.5...70.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 8.00 rpm : 1190...1200 Speed

Speed rpm : 100
Rack travel in mm : 19.00...21.00
Remarks:
: VALMET

APPLICATION

Tractor (tractor engines)

STARTING FUEL DELIVERY

Note remarks

Test sheet

: MWM

Edition Replaces : 15.06.93

Test oil

: ISO-4113

Combination no. : 9 400 085 243

Injection pump

Pump designation : PES4A80D320RS1282-1

EP type number

: 9 400 083 097

Governor

Governor design. : RS350/1500A2c2073-2R

Governer no.

: 9 420 083 269

Customer

Customer-spec. information

: MWM

Engine

: D 229-4

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 0 681 343 009

Opening

pressure, bar

: 172...175

Test lines

: 1 680 750 003

Outside diameter

x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 2.65...2.75

: (2.60...2.80)

Rack travel in mm : 9.00...12.00

Firing order

: 1-3-4-2

E05

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00

Difference ° CS : 4.00...5.00

BASIC SETTING

1st speed rpm: 1500

Rack travel in mm : 9.20...9.30

Del.quantity cm3/: 5.8...5.9

100 s: (5.6...6.0)

Spread cm3 : 0.2

100 s: (0.4)

2nd speed rpm : 350.0

Rack travel in mm: 6.0...6.2

Del.quantity cm3/: 0.7...1.0

100 s: (0.5...1.2)

Spread cm3 : 0.4

100 s: (0.6)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1500 Speed

: 58.0...59.0 Del.quantity

1000 : (56.5...60.5)

Spread cm3 : 2.50

1000 : (4.00)

RATED SPEED

1st version

Control lever

position degrees: 111...119

Testing:

1st rack travel in: 8.20

rpm : 1540...1550 Speed 2nd rack travel in: 4.00 rpm : 1585...1615 Speed 4th rack travel in: 1750 rom : 0.30...1.70Speed LOW IDLE 1 Control lever position degrees: 73...81 Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm : 6.1 Testing: Speed rpm : 250 Minimum rack trave: 8.00 Speed rpm : 350 Rack travel in mm : 6.00...6.20 Rack travel in mm: 4.00 rpm : 370...430 Speed rpm : 600 Speed Maximum rack trave: 1.50 TORQUE CONTROL Torque control curve - 1st version rpm : 1500 1st speed Rack travel in m: 9.20...9.30 rpm : 500 2nd speed Rack travel in m: 10.60...10.70 rpm : 900 3rd speed Rack travel in m: 10.20...10.40 4th speed rpm : 1200 Rack travel in m: 9.50...9.80 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 500 Del.quantity cm3/: 58.0...61.0 1000 s: (56.5...62.5) Speed : 500 rpm Speed rpm : 900 Del.quantity cm3/ : 62.5...65.5 1000 s: (61.0...67.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 8.20 rpm : 1540...1550 Speed STARTING FUEL DELIVERY rpm : 100 Speed Rack travel in mm : 19.00...21.00

Remarks:

Note remarks

Test sheet

: MWM

Edition

: 15.06.93

Replaces

Test oil

: ISO-4113

Combination no.

: 9 400 085 257

Injection pump

Pump designation : PES4A80D320RS1282

EP type number

: 9 400 083 056

Governor

Governor design.

: RSV350...1100A2C2129

-6R

Governer no.

: 9 420 083 270

Customer-spec. information Customer

: MWM

Engine

: D 229-4

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 0 681 343 009

Opening

pressure, bar

: 172...175

Test lines

: 1 680 750 CO3

Outside diameter

x Wall thickness

x Length mm

: 6.00X2.00X600

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm

: 2.20...2.30 : (2.15...2.35)

Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

E07

Phasing : 0-90-180-270

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00

Difference ° CS : 4.00...5.00

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 8.70...8.80

Del.quantity cm3/: 4.8...4.9

100 s: (4.7...5.1)

Spread

cm3 : 0.2

100 s: (0.4)

2nd speed rpm : 350.0

Rack travel in mm: 6.4...6.6 Del.quantity cm3/: 1.0...1.3

100 s: (0.8...1.5)

cm3 : 0.4Spread

100 s: (0.6)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm: 880 Rack travel in mm: 0.30...1.00

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity

. 48.5...49.5 1000 : (47.0...51.0)

: 2.50 Spread cm3

1000 : (4.00)

RATED SPEED

1st version

Control Lever

position degrees: 94...102

Testing:

1st rack travel in: 7.70 rpm : 1140...1150 Speed 2nd rack travel in: 4.00 rpm : 1180...1210 Speed 4th rack travel in: 1300 Speed rpm : 0.30...1.70 LOW IDLE 1 Control lever position degrees: 72...80 Setting point w/out bumper spring rpm : 350 Rack travel in mm: 6.0 Testing: Speed rpm : 100 Minimum rack trave: 19.00 rpm : 350 Speed Rack travel in mm: 6.40...6.60 Rack travel in mm: 2.00 Speed rpm : 605...665 TORQUE CONTROL Torque control curve - 1st version rpm : 1100 1st speed Rack travel in m: 8.70...8 80 2nd speed rpm : 500 Rack travel in m: 10.00...10.10 4th speed rpm : 900 Rack travel in m: 9.10...9.40 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 500 Del quantity cm3/: 49.5...52.5 1000 s: (48.0...54.0) Speed rpm : 900 Del.quantity cm3/: 48.5...51.5 1000 s: (47.0...53.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 7.70 Speed rpm : 1140...1150 STARTING FUEL DELIVERY rpm : 100 Speed Rack travel in mm : 19.00...21.00 Remarks:

APPLICATION

Tractor (tractor engines)

E08

Note remarks

: MWM Test sheet

Edition : 15.06.93 Replaces

Test oil : ISO-4113

Combination no. : 9 400 085 268

Injection pump

Pump designation : PES4A90D320RS2702 EP type number : 9 400 083 095

Governor

Governor design. : RSV350...1150A2C2129

-7R

: 9 420 083 273 Governer no.

Customer-spec. information Customer : MWM

: TD 229 EC-4 Engine

1st version kW : 66.2 : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.65...2.75

: (2.60...2.80)

Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00 Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 10.30...10.40

Del.guantity cm3/: 7.7...7.8

100 s: (7.5...8.0)

Spread cm3 : 0.3

100 s: (0.7)

2nd speed rpm : 350.0Rack travel in mm: 5.5...5.7

Del.quantity cm3/: 1.1...1.5

100 s: (0.9...1.7)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 4.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

77.5...78.5 1000 : (75.5...80.5) Del.quantity

: 3.00 Spread cm3

1000 : (7.00)

RATED SPEED

1st version

Control lever

position degrees: 93...101

Testing:

1st rack travel in: 9.30

rpm : 1190...1200 Speed

2nd rack travel in: 4.00

Speed

4th rack travel in: 1400

Speed

LOW IDLE 1

Control lever

position degrees: 68...76

Setting point w/out bumper spring

rpm : 350 Rack travel in mm: 5.1

Testing:

Speed rpm : 100

Minimum rack trave: 19.00

rpm : 350 Speed

Rack travel in mm : 5.50...5.70 Rack travel in mm : 2.00

rom : 550...610 Speed

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1150 1st speed

Rack travel in m: 10.30...10.40

2nd speed rpm : 500

Rack travel in m: 10.80...10.90

4th speed rpm : 700

Rack travel in m: 10.50...10.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500

Del.quantity cm3/: 69.5...72.5

1000 s: (67.5...74.5)

Speed rpm : 700 Del.quantity cm3/ : 71.0...74.0 1000 s: (69.0...76.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.30

rpm : 1190...1200 Speed

STARTING FUEL DELIVERY

rpm : 100

Rack travel in mm : 19.00...21.00

rpm : 1240...1270

rpm : 0.30...1.70

Remarks:

Spread

LOW IDLE

Speed

: VALMET

1000 s: (9.0...17.0)

rpm : 350

cm3 : 4.50

1000 s: (7.00)

Rack travel in mm : 5.50...5.70

Del.quantity cm3/: 11.0...15.0

APPLICATION

Tractor (tractor engines)

E10

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Phasing Test sheet : MB Tolerance + - ° Edition : 15.06.93 Replaces BASIC SETTING : ISO-4113 Test oil 1st speed Combination no. : 9 400 085 283 Injection pump Pump designation : PES6A90D410RS2293 EP type number : 0 410 896 031 Governor Governor design. : RSV350...1250A0C1150 -3L Spread : 9 420 083 255 Governer no. Customer-spec. information Customer : MERCEDES-BENZ Engine : OM 352-A TEST BENCH REQUIREMENTS Spread Test oil inlet temp. °C : 38...42 Overflow valve : 1 419 992 198 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 Opening : 172...175 pressure, bar 1st version Speed Del.quantity Test Lines : 1 680 750 014 Spread Outside diameter x Wall thickness x Length mm : 6.00x2.00x600 RATED SPEED (A) Injection pump setting values 1st version Insp. values in parentheses Control lever Set equal delivery quant. per values ____ Testing: BEGINNING OF DELIVERY

: 0.50 (0.75) rpm: 1250 Rack travel in mm : 10.00...10.10 Del.quantity cm3/: 6.1...6.2 100 s: (5.9...6.5) cm3 : 0.3100 s: (0.7) 2nd speed rpm : 350.0 Rack travel in mm : 7.1...7.3 Del.quantity cm3/: 1.0...1.4 100 s: (0.8...1.6) cm3 : 0.4100 s: (0.7) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Rack travel in mm : 0.30...1.00 Governor spring pre-tension Click setting x : 3.50 FULL LOAD DELIV. AT FULL LOAD STOP rpm : 1250 : 61.5...62.5 : (59.0...65.0) 1000 cm3 : 3.00 1000 : (7.00) position degrees: 100...108 1st rack travel in: 9.00 rpm : 1290...1300 Speed 2nd rack travel in: 4.00 Speed rpm : 1335...1365 4th rack travel in: 1450 rpm : 0.30...1.70Speed LOW IDLE 1

: 0-60-120-180-240-300

Prestroke mm

Test pressure, bar: 25...27

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-

: 2.15...2.25

: (2.10...2.30)

Control lever

position degrees: 72...80

Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm : 6.7

Testing:

rpm : 100 Speed Minimum rack trave: 19.00

Speed rpm : 350
Rack travel in mm : 7.10...7.30
Rack travel in mm : 2.00 rpm : 430...490 Speed

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1250 1st speed

Rack travel in m: 10.00...10.10

2nd speed rpm : 500

Rack travel in m: 10.00...10.20

5th speed rpm : 400

Rack travel in m: 11.20...11.80

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.00

rpm : 1290...1300 Speed

STARTING FUEL DELIVERY

rpm : 200

Rack travel in mm: 14.20...14.80

Remarks:

Note remarks

Test sheet Edition

: MWM

Replaces

: 15.06.93

Test oil

: ISO-4113

Combination no.

: 9 400 085 313

Injection pump

Pump designation: PES4A90D320RS2744

EP type number

: 9 400 084 012

Governor

Governor design.

: RSV350...1150A2C2129

-8R

Governer no.

: 9 420 083 277

Customer

Customer-spec, information : MWM

Engine

: TD 229 EC-4

1st version kW

: 73.6

Rated speed

: 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 0 681 343 009

Openina

pressure, bar

: 172...175

Test lines

: 1 680 750 014

Outside diameter

x Wall thickness

x Length mm

: 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 2.70...2.80

: (2.65...2.85)

Rack travel in mm : 9.00...12.00

: 1-3-4-2 Firing order

Phasina

: 0-90-180-270

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00

Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed

rpm: 1150

Rack travel in mm : 10.50...10.60

Del. quantity cm3/: 8.6...8.7

100 s: (8.4...8.9)

cm3 : 0.3

100 s: (0.7)

2nd speed

Spread

rpm : 350.0

Rack travel in mm: 5.3...5.5

Del.quantity cm3/ : 1.1...1.5

100 s: (0.9...1.7) cm3 : 0.4

Spread

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1150

: 3.00

Del.quantity

: 86.5...87.5

1000 : (84.5...89.5)

Spread cm3

1000 : (7.00)

RATED SPEED

1st version

Control lever

position degrees: 99...107

Testing:

1st rack travel in: 9.50

rpm : 1190...1200 Speed

2nd rack travel in: 4.00

rpm : 1260...1290 Speed

4th rack travel in: 1450

rom : 0.30...1.70Speed

LOW IDLE 1

Control lever

position degrees: 73...81

Setting point w/out bumper spring

rpm : 350 Speed Rack travel in mm: 4.9

Testing:

Speed : 100 rpm .

Minimum rack trave: 19.00

rpm : 350 Speed

Rack travel in mm : 5.30...5.50

Rack travel in mm: 2.00

Speed rom : 555...615

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 10.50...10.60

2nd speed rpm : 500

Rack travel in m: 10.80...10.90

3rd speed rpm : 800

Rack travel in m: 10.80...10.90

4th speed rpm : 960

Rack travel in m: 10.60...10.80

FUEL DELIVERY CHARACTERISTICS

1st version

: 500 Speed מכניו

Del.quantity cm3/: 80.0...83.0

1000 s: (78.0...85.0)

Speed rpm : 800 Del.quantity cm3/: 84.5...87.5

1000 s: (82.5...89.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.50

Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed COM : 100

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350

Rack travel in mm : 5.30...5.50

Del.quantity cm3/: 11.0...15.0 1000 s: (9.0...17.0)

cm3 : 4.50Spread

1000 s: (7.00)

Remarks:

: VALMET

APPLICATION

Tractor (tractor engines)

Note remarks

Test sheet

: MWM

Edition

: 15.06.93

Replaces

Test oil

: ISO-4113

Combination no.

: 9 400 085 314

Injection pump

Pump designation : PES6A90D320RS2718

EP type number

: 9 400 084 003

Governor

Governor design.

: RSV350...1150A2c2097

-2R

Governer no.

: 9 420 083 276

Customer-spec. information Customer

: MWM

Engine

: TD 229 EC-06

1st version kW

: 117.8

Rated speed

: 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 0 681 343 009

Openina

pressure, bar

: 172...175

Test lines

: 1 680 750 014

Outside diameter

x Wall thickness

x Length mm

: 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 2.70...2.80

: (2.65...2.85)

Rack travel in mm : 9.00...12.00

Firing order

: 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00 Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed

rpm: 1150

Rack travel in mm : 11.30...11.40

Del.quantity cm3/: 8.6...8.7

100 s: (8.4...8.9)

Spread

Spread

Speed

cm3 : 0.3

100 s: (0.7)

2nd speed rpm : 350.0

Rack travel in mm: 5.9...6.1

Del.quantity cm3/: 1.2...1.6 100 s: (1.0...1.8)

cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Spread

Speed

rpm : 1150

Del.quantity

: 86.5...87.5 1000 : (84.5...89.5)

: 3.00 cm3

1000 : (7.00)

RATED SPEED

1st version

E15

Control lever

position degrees: 95...103

Testing:

1st rack travel in: 10.30

rpm : 1190...1200 Speed

2nd rack travel in: 4.00

Speed rpm : 1255...1285

4th rack travel in: 1450

Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 70...78

Setting point w/out bumper spring

rpm : 350 Rack travel in mm: 5.5

Testing:

Speed rpm : 100

Minimum rack trave: 19.00

Speed rpm : 350 Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 575...635

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 11.30...11.40

2nd speed

nd speed rpm : 500 Rack travel in m: 11.90...12.10

rpm : 800 4th speed

Rack travel in m: 11.60...11.80

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500 Del.quantity cm3/ : 84.0...87.0

1000 s: (32.0...89.0)

Speed : 800 rpm

Del.quantity cm3/: 85.5...88.5

1000 s: (83.5...90.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.30

Speed rpm : 1190...1200

STARTING FUEL DELIVERY

: 100 rpm

Rack travel in mm : 19.00...21.00

Speed

Rack travel in mm : 5.90...6.10 Del.quantity cm3/: 12.5...16.5

rpm : 350

1000 s: (10.5...18.5)

Spread cm3 : 4.501000 s: (7.00)

Remarks:

: VALMET

APPLICATION

LOW IDLE

Tractor (tractor engines)

Note remarks

Test sheet

: MB

Edition

: 15.06.93

Replaces

Test oil

: ISO-4113

Combination no.

: 9 400 085 327

Injection pump

Pump designation: PES6A95D410RS2772

EP type number

: 9 400 084 018

Governor

Governor design.

: RSV350...1250A0c1150

-4L

Governer no.

: 9 420 083 255

Customer-spec. information

Customer

: MERCEDES-BENZ

Engine

: OM 366 A

1st version kW

: 121.0

Rated speed

: 2500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 0 681 343 009

Opening

pressure, bar

: 172...175

Test lines

: 1 680 750 015

Outside diameter

x Wall thickness

x Length mm

: 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 3.20...3.30

: (3.15...3.35)

Rack travel in mm : 9.00...12.00

Firing order

: 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

BASIC SETTING

1st speed

rom: 1250

Rack travel in ram : 9.60...9.70

Del.quantity cm3/: 8.1...8.3

100 s: (7.9...8.5)

Spread

cm3 : 0.3

100 s: (0.8)

2nd speed rpm : 350.0Rack travel in mm: 6.7...6.9

Del.quantity cm3/: 1.3...1.7 100 s: (1.0...2.0)

Spread

Speed

cm3 : 0.5

100 s: (0.9)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1250

Del.quantity

: 81.0...83.0

1000 : (79.0...85.0)

Spread

cm3 : 3.50 1000 : (8.00)

RATED SPEED

1st version

Control lever

position degrees: 99...107

Testing:

Speed

1st rack travel in: 8.60

Speed

rpm : 1290...1300

2nd rack travel in: 4.00

rpm : 1325...1355

4th rack travel in: 1500

Speed rpm : 0.30...1.70 LOW IDLE 1 Control Lever position degrees: 71...79 Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm: 6.3 Testing: Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm: 350 Rack travel in mm: 6.70...6.90 Rack travel in mm: 2.00 Speed rpm : 420...480 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1250 Rack travel in m: 9.60...9.70 nd speed rpm : 500 Rack travel in m: 9.60...9.80 2nd speed rpm : 400 5th speed Rack travel in m: 10.80...11.40 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 800 Del.quantity cm3/ : 72.0...76.0 1000 s: (70.0...78.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 8.60 Speed rpm : 1290...1300 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 95.0...115.0 1000 s: (92.0...118.0) Rack travel in mm : 13.90...14.10 LOW IDLE rpm : 350 Rack travel in mm : 6.70...6.90 Del.quantity cm3/: 13.0...17.0 1000 s: (10.0...20.0) cm3 : 5.50 Spread 1000 s: (9.00)

Remarks:

APPLICATION

Combine-harvester

BOSCH INJ. PLMP TEST SPECIFICATIONS Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order Note remarks Test sheet : CUM Edition : 21,04,93 Phasing : 0-60-120-180-240-300 Replaces Test oil : ISO-4113 Tolerance + - ° : 0.50 (0.75) Combination no. : 9 400 085 354 Time to cyl. no. : 1 Injection pump BEGINNING OF DELIVERY DIFFERENCE Pump designation : PES6A100D320/3RS2691 betw. rack trav. m: 9.00...12.00 : 9 410 230 028 EP type number & maximum rack tra: 21.00 Governor Difference ° CS : 3.00...4.00 Governor design. : RQV350...1100AB1271R Governer no. : 9 420 080 343 BASIC SETTING Customer-spec. information 1st speed rpm: 1100 Customer : CUMMINS Rack travel in mm : 13.70...13.80 Engine : 6 CTA - 8.3 L Del.quantity cm3/: 12.9...13.1 1st version kW : 180.0 Rated speed : 2200 100 s: (12.7...13.3) TEST BENCH REQUIREMENTS Spread cm3 : 0.3Test oil 100 s: (0.6) inlet temp. °C : 38...42 2nd speed rom : 350.0Overflow valve Rack travel in mm : 5.9...6.1 : 1 419 992 198 Del.quantity cm3/: 1.3...1.7 100 s: (1.0...1.9) cm3 : 0.3Inlet press., bar: 1.50 Spread 100 s: (0.5) Test nozzle holder : 0 681 343 009 assembly (B) Setting of injection pump with governor Openina pressure, bar : 172...175 GUIDE SLEEVE TRAVEL rpm : 1100 1st speed travel mm : 7.70...7.90 Test Lines : 1 680 750 014 rpm : 350 2nd speed : 1.20...1.60 travel mm Outside diameter 3rd speed rpm : 600 x Wall thickness travel mm : 3.90...4.50 : 6.00x2.00x600 x Length mm rpm : 1150 4th speed : 8.00...8.60 travel mm (A) Injection pump setting values rpm : 1290 5th speed Insp. values in parentheses : 9.50...10.10 travel mm Set equal delivery quant. per values GUIDE SLEEVE POSITION Control-lever position BEGINNING OF DELIVERY Degree: -1 Test pressure, bar: 25...27 rpm : 1160 Speed Rack travel in mm : 15.20...17.80 Prestroke mm : 2.80...2.90 : (2.75...2.95) FULL LOAD DELIV. AT FULL LOAD STOP

1st version 1st pressure hPa : -Speed rpm : 1100 Rack travel in m: 11.30...11.50 Aneroid pressure h: 900 2nd pressure hPa : 400 Rack travel in m: 12.00...12.20 3rd pressure hPa : 580 Rack travel in m: 13.50...13.80 Del.quantity : 129.0...131.0 1000 : (127.0...133.0) Spread cm3 : 3.50 1000 : (6.00)START CUT-OUT RATED SPEED Speed 1/min : 270 (290) 1st version Control lever FUEL DELIVERY CHARACTERISTICS position degrees: 113...121 Testing: 1st version 1st rack travel in: 12.70 Speed rpm : 1140...1150 2nd rack travel in: 4.00 Aneroid pressure h: 900 Speed rpm : 750 Del.quantity cm3/: 142.5...145.5 Speed rpm : 1265...1295 1000 s: (140.0...148.0) 4th rack travel in: 1450 Aneroid pressure h: 900 Speed rpm : 850 Del.quantity cm3/ : 139.5...142.5 1000 s: (137.0...145.0) Speed rpm : 0.00...1.00LOW IDLE 1 Control lever Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 82.5...84.5 position degrees: 66...74 Testing: 1000 s: (80.5...86.5) Speed : 100 rpm Minimum rack trave: 9.50 rom : 350 BREAKAWAY Rack travel in mm : 5.90...6.10 1st version CONSTANT REGULATION 1mm rack travel less than Speed rpm : 375...525 full load rack tr: 12.70 TORQUE CONTROL Speed rpm : 1140...1150 Dimension a mm : 0.80 Torque control curve - 1st version STARTING FUEL DELIVERY rpm : 1100 1st speed Rack travel in m: 13.70...13.80 nd speed rpm : 750 Rack travel in m: 14.50...14.60 2nd speed Speed rpm : 100 Del.quantity cm3/ : 165.0...179.0 rpm : 850 3rd speed 1000 s: (161.0...183.0) Rack travel in m: 14.20...14.40 Rack travel in mm : 19.00...21.00 4th speed rpm : 950 Rack travel in m: 13.90...14.10 LOW IDLE Speed rpm : 350
Rack travel in mm : 5.90...6.10
Del.quantity cm3/ : 13.0...17.0
1000 s: (10.5...19.5) Aneroid/Altitude Compensator Test cm3 : 3.50 1st version Spread Setting 1000 s: (5.50) Speed : 500 rpm Pressure hPa : 900 Remarks: Rack travel mm : 14.50...14.60 : C.D.C. # 3355290 Measurement Start-of-delivery mark 11° cam angle after start of delivery cyl. 1 1/min: 500 Speed

E20

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1-5-3-6-2-4 Note remarks Test sheet : CUM Phasing : 0-60-120-180-240-300 Edition : 21.04.93 Replaces Tolerance $+ - ^{\circ} : 0.50 (0.75)$: ISO-4113 Test oil Time to cyl. no. : 1 Combination no. : 9 400 085 355 BEGINNING OF DELIVERY DIFFERENCE Injection pump Pump designation : PES6A100D120RS2841 betw. rack trav. m: 9.00...12.00 & maximum rack tra: 21.00 Difference ° CS : 3.00...4.09 EP type number : 9 400 084 033 Governor Governor design. : RQV350...1400AB1272R : 9 420 080 344 Governer no. BASIC SETTING Customer-spec. information 1st speed rpm: 1400 Customer : CUMMINS Rack travel in mm : 8.80...8.90 Engine : 6 BT 140 Del.quantity cm3/: 8.0...8.2 1st version kW : 105.0 Rated speed : 2800 100 s: (7.8...8.4) TEST BENCH REQUIREMENTS Spread cm3 : 0.3Test oil 100 s: (0.6) inlet temp. °C : 38...42 2nd speed rpm : 350.0 Overflow valve Rack travel in mm : 4.8...5.0 Del.quantity cm3/: 0.5...0.9 100 s: (0.3...1.1) : 1 419 992 198 Inlet press., bar: 1.50 cm3 : 0.3Spread 100 s: (0.5) Test nozzle holder : 0 681 343 009 assembly (B) Setting of injection pump with governor Opening pressure, bar : 172...175 GUIDE SLEEVE TRAVEL rpm : 1400 1st speed : 6.40...6.60 travel mm Test lines : 1 680 750 014 2nd speed rpm : 350 travel mm : 1.70...2.20 Outside diameter 3rd speed rpm : 600 x Wall thickness : 3.70...4.20 travel mm x Length mm : 6.00X2.00X600 4th speed rpm : 1000 : 4.70...5.20 travel mm (A) Injection pump setting values 1650 5th speed rpm Insp. values in parentheses : 7.50...8.00 travel mm Set equal delivery quant. per values FULL LOAD DELIV. AT FULL LOAD STOP BEGINNING OF DELIVERY 1st version Test pressure, bar: 25...27 Speed rpm : 1400 : 80.0...82.0 Del.quantity : 2.85...2.95 1000 : (78.0...84.0) Prestroke mm : (2.80...3.00) : 3.50 Spread cm3 Rack travel in mm : 9.00...12.00 1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 102...110

Testina:

1st rack travel in: 7.80

Speed rpm : 1465...1480

2nd rack travel in: 4.00

rpm : 1620...1650 Speed

LOW IDLE 1

Control Lever

position degrees: 67...75

Testing:

Speed rpm : 100

Minimum rack trave: 9.00

rpm : 350 Speed

Rack travel in mm : 4.80...5.00

CONSTANT REGULATION

rpm : 350...550 Speed

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800

Del.quantity cm3/: 81.5...84.5

1000 s: (79.0...87.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 7.80

rpm : 1465...1480 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 166.0...180.0 1000 s: (163.0...183.0)

Rack travel in mm: 19.00...21,00

LOW IDLE

: 350 rpm

Rack travel in mm : 4.80...5.00

Del.quantity cm3/: 5.0...9.0

1000 s: (3.0...11.0)

cm3 : 3.50 Spread

1000 s: (5.50)

Remarks:

: C.D.C # 3355313

Start-of-delivery mark 9.5° cam angle

after start of delivery cyl. 1

E23

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB Edition : 15.06.93 Replaces Test oil : ISO-4113 Combination no. : 9 400 085 360 Injection pump Pump designation : PES4A95D41ORS2843 EP type number : 9 400 084 034 Governor Governor design. : RQV300...1400AB1273L : 9 420 080 346 Governer no. Customer-spec, information Customer : MERCEDES-BENZ Engine : OM 364 1st version kW : 66.0 Rated speed : 2800 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 419 992 198 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening pressure, bar : 172...175 Test lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00X1.50X600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

Firing order : 1-3-4-2 Phasing : 0-90-180-270 Tolerance + - ° : 0.50 (0.75) BASIC SETTING rpm: 1400 1st speed Rack travel in mm : 9.70...9.80 Del.quantity cm3/: 6.9...7.1 100 s: (6.7...7.3) Spread cm3 : 0.3100 s: (0.8) 2nd speed rpm : 300.0Rack travel in mm: 6.4...6.6 Del.quantity cm3/: 0.7...1.1 100 s: (0.5...1.4) cm3 : 0.5Spread 100 s: (0.9) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 1400 : 8.10...8.30 travel mm rpm : 300 2nd speed : 0.80...1.30 travel mm 3rd speed rpm : 700 : 3.90...4.40 travel mm 4th speed rpm : 1100: 5.80...6.30 travel mm rpm : 1550 5th speed : 9.30...9.80 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1445 Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1400 Speed : 69.5...71.5 Del.quantity 1000 : (67.5...73.5) : 3.50 Spread cm3

1000

RATED SPEED

: (8.00)

per values

Prestroke mm

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Rack travel in mm : 9.00...12.00

: 3.20...3.30

: (3.15...3.35)

1st version Control lever

position degrees: 108...116

Testina:

1st rack travel in: 8.70

Speed rpm : 1445...1455 2nd rack travel in: 4.00

Speed rpm : 1520...1550 4th rack travel in: 1680

rpm : 0.00...1.00Speed

LOW IDLE 1

Control lever

position degrees: 66...74

Testing:

Speed rpm : 100 Minimum rack trave: 8.00

rpm : 300

Rack travel in mm : 6.40...6.60

CONSTANT REGULATION

Speed rpm : 450...550

START CUT-OUT

1/min : 250 (270) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 700 Speed

Del.quantity cm3/: 59.0...63.0

1000 s: (57.0...65.0) cm3 : 5.00

Spread

1000 s: (8.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.70

rpm : 1445...1455 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 81.0...96.0 1000 s: (78.5...98.5) Rack travel in mm : 13.80...14.00

Remarks:

E25

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : SCA 11,1 i : 21.04.93 Edition Replaces : 10.90 Test oil : ISO-4113 Combination no. : 9 400 087 424 Injection pump Pump designation : PE6P120A720RS7020 EP type number : 0 412 626 828 Governor Governor design. : RQV200...1000PA539-8 : 0 421 813 635 Governer no. Customer-spec. information Customer : SAAB-SCANIA Engine : DS 11 34 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test rozzle holder assembly : 1 688 901 019 Openina pressure, bar : 207...210 Orifice plate diameter mm 3.0 : Test lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00x1.50x600 (A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 25...27 Prestroke mm : 5.00...5.10 : (4.95...5.15) Rack travel in mm : 9.00...12.00 E26

Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance + - * : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 700 Rack travel in mm : 12.90...13.00 Del.quantity cm3/: 20.8...21.0 100 s: (20.5...21.3) Spread cm3 : 0.6100 s: (0.9) rpm : 225.0 2nd speed Rack travel in mm: 4.6...5.0 Del.quantity cm3/: 1.8...2.2 100 s: (-) Spread cm3 : 0.3100 s: (0.6) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 225 : 1.20...1.60 travel mm 2nd speed rpm : 350 travel mm : 2.40...3.00 3rd speed rpm : 650 travel mm : 4.50...5.10 : 1045 4th speed rpm : 8.40...8.60 travel mm rpm : 1150 5th speed travel mm : 9.80...10.20 GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1050 Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 700 Aneroid pressure h: 900

Del.quantity : 200.0...213.0)

Spread

: 6.00 cm3

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 113...121

Testing:

1st rack travel in: 11.90

rpm : 1040...1050 Speed

2nd rack travel in: 4.00

rpm : 1135...1165 Speed

4th rack travel in: 1250

Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever

position degrees: 61...69

Testing:

Speed : 125 rpm

Minimum rack trave: 5.80

: 225 Speed rpm

Rack travel in mm : 4.60...4.80

Rack travel in mm : 2.00

: 340...400 Speed rpm

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 500 rpm

hPa : 900 Pressure

: 12.90...13.00 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.50...10.90

2nd pressure hPa : 520

Rack travel in m: 12.30...12.40

3rd pressure hPa : 320

Rack travel in m: 11.10...11.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

: 1000 Speed rpm

Del.quantity cm3/: 198.0...206.0 1000 s: (196.0...208.0)

Aneroid pressure h: -

: 500 Speed rpm

Del.quantity cm3/: 151.0...155.0

1000 s: (149.0...157.0)

BREAKAWAY

ist version

1mm rack travel less than

full load rack tr: 11.90

rpm : 1040...1050 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 275.9...325.0 1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

rpm : 225 Speed

Rack travel in mm : 4.60...4.80

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 nm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders

to 2.9...3.1 mm.

Start-of-delivery setting with ROBO

diaphragm.

Note remarks

Test sheet : FOR 7,8 o Edition : 15.06.93

Replaces : 10.90 Test oil : ISO-4113

Combination no. : 9 400 087 444

Injection pump

Pump designation : PES6P110A720RS3268

EP type number : 9 400 087 073

Governor

Governor design. : RSV650...1250P8A530

-2

Governer no. : 9 420 082 327

Customer-spec. information Customer : FNH-IVECO

Engine : 7.8 L

1st version kW : 190.0 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 9 401 087 403

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 017

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 015

Outside diameter x wall thickness

A Watt tilltoless

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.25...4.35 : (4.20...4.40)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00

Difference ° CS : 2.00...3.00

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 16.2...16.4

100 s: (16.0...16.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 650.0 Rack travel in mm : 5.2...5.4 Del.quantity cm3/: 2.2...2.6

100 s: (2.0...2.9)

Spread cm3 : 0.3 100 s: (0.5)

100 5: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Spread

Speed rpm : 1200 Aneroid pressure h: 1000

Del.quantity : 162.0...164.0 1000 : (160.0...166.0)

cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 98...106

Testing:

1st rack travel in: 10.10

rpm : 1260...1270 Speed

2nd rack travel in: 4.00

rpm : 1295...1315 Speed

3rd rack travel in: 4.00

rpm : 1310...1330 Speed

4th rack travel in: 1400

rpm : 0.30...1.70Speed

LOW IDLE 1

Control lever

position degrees: 73...81

Setting point w/out bumper spring

rpm : 650 Speed Rack travel in mm: 4.8

Speed rom : 650 Rack travel in mm : 5.20...5.40

Rack travel in mm : 2.00

Speed : 660...720 man

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed : 1200 rpm Pressure hPa : 1000

Rack travel mm : 11.10...11.20

Measurement

1/min: 1200 Speed

1st pressure hPa : -

Rack travel in m: 8.00...8.20

2nd pressure hPa : 400

Rack travel in m: 8.60...8.70

3rd pressure hPa : 600

Rack travel in m: 10.70...11.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/ : 67.5...69.5

1000 s: (65.5...71.5)

BREAKAWAY

1st version

F01

1mm rack travel less than

full load rack tr: 10.10

rpm : 1260...1270 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 140.0...170.0

1000 s: (136.0...174.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

: 650 Speed rpm

Rack travel in mm : 5.20...5.40 Del.quantity cm3/ : 22.5...26.5

1000 s: (20.0...29.0)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

APPLICATION

Combine-harvester

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 3.45...3.55 : (3.40...3.60) Note remarks Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Test sheet : CUM 8,3 u 1 Edition : 15.06.93 Replaces : 10.91 Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 9 400 087 449 Tolerance + - ° : 0.50 (0.75) Injection pump Time to cyl. no. : 1 Pump designation: PES6P120A320/3RS3264 : 9 400 087 075 EP type number BASIC SETTING Governor Governor design. : RQV350...1100PA973 1st speed rpm: 1100 Governer no. : 9 420 080 293 Rack travel in mm : 11.50...11.60 Customer-spec. information Customer : CUMMINS Del.quantity cm3/: 19.9...20.1 : 6 CTAA - 8.3 L Engine 100 s: (19.6...20.4) : 216.6 1st version kw Spread cm3 : 0.5: 2200 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 350.0 Rack travel in mm : 5.9...6.1 Test oil inlet temp. °C : 38...42 Del.quantity cm3/ : 0.5...1.1 100 s: (0.3...1.3) Overflow valve Spread cm3 : 0.5: 1 417 413 025 100 s: (0.8) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 019 assembly GUIDE SLEEVE TRAVEL 1st speed rpm : 1150 Openina travel mm : 7.00...7.10 : 207...210 pressure, bar 2nd speed rom : 350 : 1.40...1.80 travel mm Orifice plate 3rd speed rpm : 650 diameter mm : 0,8 : 4.30...4.70 travel mm 4th speed : 1400 rpm : 8.80...9.20 travel mm Test lines : 1 680 750 015 GUIDE SLEEVE POSITION Outside diameter Control-lever position x Wall thickness Degree: -1 : 6.00x1.50x600 x Length mm rpm : 1325 Speed Rack travel in mm : 15.20...17.80 (A) Injection pump setting values Insp. values in parentheses FULL LOAD DELIV. AT FULL LOAD STOP Set equal delivery quant.

> 1st version Speed

rpm : 1100

Del.quantity : 199.0...204.0)

Aneroid pressure h: 1200

per values

Test pressure, bar: 25...27

BEGINNING OF DELIVERY

: 5.00 Spread cm3 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 106...114

Testing:

1st rack travel in: 10.50

Speed rpm : 1160...1170 2nd rack travel in: 4.00

rpm : 1330...1360 Speed

4th rack travel in: 1500

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 66...74

Testing:

Speed rpm : 100 Minimum rack trave: 8.00 rpm : 350 Speed

Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

Speed rpm : 425...575

Aneroid/Altitude Compensator Test

1st version

Settina

Speed rpm : 500 hPa : 1200 Pressure

Rack travel mm : 11.50...11.60

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 8.90...9.10

2nd pressure hPa : 480

Rack travel in m: 9.60...9.70

3rd pressure hPa : 800

Rack travel in m: 10.70...11.00

START CUT-OUT

Speed 1/min: 290 (310)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 rpm : 700 Speed

F03

Del.quantity cm3/: 204.0...208.0

1000 s: (200.5...211.5)

Spread cm3 : 6.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 116.0...119.0

1000 s: (114.0...121.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.50

Speed rpm : 1160...1170

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 260.0...290.0

1000 s: (256.0...294.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350 Rack travel in mm : 5.90...6.10

Del.quantity cm3/ : 5.0...11.0

1000 s: (3.0...13.0)

cm3 : 5.00 Spread

1000 s: (8.00)

Remarks:

Start-of-delivery mark is at 8° after start of delivery.

Note remarks

Test sheet : CUM 8,3 u 3 : 15.06.93 Edition Replaces : 10.91 Test oil : ISO-4113

Combination no. : 9 400 087 463

Injection pump

Pump designation: PES6P120A320/3RS3264

EP type number

: 9 400 087 075 Governor

Governor design. : RQV350...1100PA973-1

: 9 420 080 317 Governer no.

Customer-spec. information Customer : CUMMINS

Engine : 6 CTAA - 8.3 L

1st version kW : 186.4 : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.45...3.55

: (3.40...3.60)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rom: 1100

Rack travel in mm : 10.40...10.50

Del.quantity cm3/: 17.1...17.3

100 s: (16.8...17.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm: 5.9...6.1 Del.quantity cm3/: 0.5...1.1

100 s: (0.3...1.3)

Spread cm3 : 0.5 100 s: (0.8)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1150

: 7.00...7.10 travel mm rpm : 3502nd speed

: 1.40...1.80 travel mm

3rd speed rpm : 650

: 4.30...4.70 travel mm

4th speed rpm : 1400

travel mm : 8.80...9.20

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1325 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

Aneroid pressure h: 900

Del.quantity : 771.u...176.0)

: 5.00 Spread cm3 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 105...113

Testing:

1st rack travel in: 9.40

Speed rpm : 1160...1170

2nd rack travel in: 4.00

rpm : 1305...1335 Speed

4th rack travel in: 1500

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 66...74

Testing:

rpm : 100 Speed Minimum rack trave: 8.00 rpm Speed

Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

Speed rpm : 425...575

Aneroid/Altitude Compensator Test

1st version

Settina

Speed: : 500 rpm Pressure hPa : 900

: 10.40...10.50 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa :-

Rack travel in m: 9.00...9.20

2nd pressure hPa : 490

Rack travel in m: 9.40...9.50

3rd pressure hPa : 660

Rack travel in m: 10.00...10.30

START CUT-OUT

Speed 1/min : 290 (310)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 Speed rpm : 700

F05

Del.quantity cm3/: 166.0...170.0

1000 s: (162.5...173.5)

Spread cm3 : 6.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 118.0...121.0

1000 s: (116.0...123.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.40

Speed rpm : 1160...1170

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 260.0...290.0

1000 s: (256.0...294.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

rpm : 350 Speed

Rack travel in mm : 5.90...6.10

Del.quantity cm3/: 5.0...11.0 1000 s: (3.0...13.0)

cm3 : 5.00 Spread

1000 s: (8.00)

Remarks:

Start-of-delivery mark is at 8° after

start of delivery.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB Edition : 21.04.93 Replaces Test oil : ISO-4113 Combination no. : 9 400 087 477 Injection pump Pump designation : PES6P120A720RS3256-2 EP type number : 9 400 087 080 Governor Governor design. : RQV300...1300PA1057 Governer no. : 9 420 080 338 Customer-spec. information Customer : MERCEDES-BENZ Engine : OM 366 LA 1st version kw : 125.1 Rated speed : 2600 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Cverflow valve : 1 417 413 025 Inlet press., bar: 1.50 Overflow

quantity min. 1/h: 100...120

Test nozzle holder assembly

assembly : 1 688 901 019

Opening pressur

pressure, bar : 207...210

Orifice plate diameter mm

grameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10 : (2.95...3.15)
Rack travel in mm : 20.00...21.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 4.80...5.40

Del.quantity cm3/ : 1.7...2.0

100 s: (1.4...2.3)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 300.0 Rack travel in mm : 7.2...7.5 Del.quantity cm3/ : 1.0...1.6 100 s: (0.7...1.9)

100 s: (U./...1.9)

Spread cm3 : 0.8 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300 travel mm : 0.80...1.30

2nd speed rpm : 660

travel mm : 3.80...4.30

3rd speed rpm: 960

travel mm : 5.20...5.70

4th speed rpm: 1357

travel mm : 8.00...8.50

5th speed rpm: 1492

travel mm : 9.80...10.30

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 Speed rpm : 1385

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm : 1000 Del.quantity : 17.0...20.0 1000 : (14.0...23.0) : 2.00 Spread cm3 1000 : (3.00) RATED SPEED 1st version Control Lever position degrees: 106...114 Testina: 1st rack travel in: 9.60 Speed rpm : 1340...1350 2nd rack travel in: 4.00 rpm : 1415...1445 Speed 4th rack travel in: 1550 Speed rom : 0.00...1.00LOW IDLE 1 Control Lever position degrees: 73...81 Testing: Speed : 100 rpm Minimum rack trave: 9.00 : 300 rpm Rack travel in mm : 7.30...7.50 CONSTANT REGULATION Speed rpm : 300...450 Aneroid/Altitude Compensator Test LOW IDLE 1st version Settina : 500 Speed rpm hPa : 1200 Pressure Rack travel mm : 10.70...10.90 Measurement Speed $1/\min : 500$ 1st pressure hPa : -Rack travel in m: 9.80...10.10 2nd pressure hPa : 350 Rack travel in m: 10.10...10.30 3rd pressure hPa : 420 Rack travel in m: 10.40...10.60 START CUT-OUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1200 Speed rpm : 1300 Del.quantity cm3/: 140.0...142.0 1000 s: (137.0...145.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 1200 : 800 Speed rom Del.quantity cm3/: 115.0...119.0 1000 s: (112.0...122.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm: 500 Del.quantity cm3/: 63.0...65.0 1000 s: (60.0...68.0) Spread cm3 : 8.001000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.60 Speed rpm : 1340...1350 STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 90.0...110.0 1000 s: (86.0...114.0)

Speed rpm Rack travel in mm : 7.20...7.50 Del.quantity cm3/: 10.0...16.0 1000 s: (7.0...19.0)

Spread cm3 : 8.00 1000 s: (12.00)

Remarks:

Start-of-delivery blocking at 4.05 mm after cyl. 1 start-of-delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS Test pressure, bar: 27...29 Note remarks Prestroke mm : 2.80...2.90 : (2.75...2.95) : CUM 8,3 a61 Test sheet Rack travel in mm : 9.00...12.00 Edition : 21.04.93 Firing order : 1-5-3-6-2-4 Replaces : 02.91 Test oil : ISO-4113 Combination no. : 9 400 230 110 Phasina : 0-60-120-180-240-300 Phasing Injection pump Tolerance + - ° : 0.50 (0.75) Pump designation : PES6A100D320/3RS2691 Time to cyl. no. : 1 : 9 410 230 030 EP type number Governor BASIC SETTING Governor design. : RSV450...1100A0C2190 -42R 1st speed rpm : 1100: 0 420 233 248 Governer no. Rack travel in mm : 12.10...12.20 Customer-spec. information Customer : C.D.C. Del.quantity cm3/: 12.0...12.2 : 6CT830 Engine 100 s: (11.8...12.4) : 150.6 1st version kW Spread cm3 : 0.4Rated speed : 2200 100 s: (0.6) TEST BENCH REQUIREMENTS 2nd speed rpm : 450.0 Rack travel in mm : 5.7...5.9 Del.quantity cm3/ : 1.4...1.8 Test oil inlet temp. °C : 38...42 100 s: (1.2...2.0) Overflow valve cm3 : 0.6Spread : 1 417 413 047 100 s: (0.8) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -3 assembly : 1 688 901 101 Speed rpm : 800 Rack travel in mm : 0.30...0.70 **Openina** pressure, bar : 207...210 Governor spring pre-tension Click setting x : 4.50Orifice plate diameter mm : 0,6 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Test lines : 1 680 750 014 Speed rpm : 1100: 120.0...122.0 1000 : (118.0...124.0) Del.quantity Outside diameter x Wall thickness : 4.00 Spread cm3 : 6.00x2.00x600 x Length mm 1000 : (6.50) (A) Injection pump setting values RATED SPEED Insp. values in parentheses Set equal delivery quant. 1st version per values ___ Control lever position degrees: 46...54 BEGINNING OF DELIVERY

F08

Testing:

1st rack travel in: 11.10

Speed rpm : 1155...1165

2nd rack travel in: 4.00

rpm : 1245...1255 Speed

3rd rack travel in: 4.00 rpm : 1240...1270 Speed

4th rack travel in: 1300

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 22...30

Setting point w/out bumper spring

rpm : 450 Rack travel in mm : 5.3

Testing:

Speed rpm : 100

Minimum rack trave: 19.00

rpm : 450

Rack travel in mm : 5.70...5.90

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 12.10...12.20

2nd speed rpm : 750

Rack travel in m: 13.20...13.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750

Del.quantity cm3/: 134.0...138.0

1000 s: (132.0...140.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.10

Speed rpm : 1155...1165

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 145.0...165.0 1000 s: (140.0...170.0) Rack travel in mm : 20.00...21.00

LOW IDLE

: 450 rom

Rack travel in mm : 5.70...5.90

F09

Del.quantity cm3/: 14.5...18.5 1000 s: (12.5...20.5)

cm3 : 6.00Spread

1000 s: (8.00)

Remarks:

: C.D.C. # 3915685

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

Limit shutoff stop screw to 1.0 mm.

Note remarks

Test sheet

: MWM

Edition

: 15.06.93

Replaces Test oil

: ISO-4113

Combination no.

: 9 407 083 263

Injection pump

EP type number

Pump designation : PES6A90D320RS2605 : 9 400 083 078

Governor

Governor design. : RSV325...900A1C2132R

Governer no.

: 9 420 083 280

Customer-spec. information Customer

: MWM

Engine

: TD 229-6

1st version kW

Rated speed

: 89.7 : 1800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 0 681 343 009

Opening

pressure, bar

: 172...175

Test lines

: 1 680 750 003

Outside diameter x Wall thickness

x Length mm

: 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 2.20...2.30

Rack travel in mm : 9.00...12.00

: (2.15...2.35)

Firing order

: 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00 Difference ° CS : 4.00...5.00

BASIC SETTING

1st speed

rpm: 900

Rack travel in mm : 10.20...10.30

Del.quantity cm3/: 7.3...7.4

100 s: (7.1...7.6)

Spread

cm3 : 0.3

100 s: (0.7)

2nd speed

rpm : 325.0

Rack travel in mm: 6.9...7.1 Del.quantity cm3/: 1.3...1.7

100 s: (1.1...1.9)

Spread

Speed

cm3 : 0.4100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 900

Del.quantity

: 73.0...74.0

1000 : (71.0...76.0)

Spread

cm3 : 3.00

1000 : (7.00)

RATED SPEED

1st version

Control lever

position degrees: 93...101

F10

Testing:

1st rack travel in: 9.20 Speed rpm : 923...928 2nd rack travel in: 4.00 rpm : 954...967 Speed

4th rack travel in: 1050

Speed rpm : 0.30...1.70

LOW IDLE 1 Control lever

position degrees: 70...78

Setting point w/out bumper spring Speed rpm : 325 Rack travel in mm : 6.5

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm : 325

Rack travel in mm : 6.90...7.10

Rack travel in mm : 2.00 Speed rpm : 365...425

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 900
Rack travel in m: 10.20...10.30
2nd speed rpm : 500

Rack travel in m: 10.20...10.40

5th speed rpm : 375

Rack travel in m: 11.00...11.60

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.20 rpm : 923...928 Speed

STARTING FUEL DELIVERY

rpm : 100

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 325 Rack travel in mm : 6.90...7.10 Del.quantity cm3/ : 13.5...17.5

1000 s: (11.5...19.5)

Spread cm3 : 4.50

1000 s: (7.00)

Remarks:

APPLICATION

Generator

F11

Note inst. in remarks column

Test scheet : CDC Edition : 29.06.93 replaces : 01.85 Calibrating oil : ISO-4113

Injection pump : VE4/12F1250R123-10 Type number : 0 460 424 019

Customer Part-No. :

Customer-specific information Customer : CUMMINS

Enaine : 4BTA 3.9

TEST BENCH REQUIREMENTS

Calibrating-oil return temb.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 016 assembly

Opening |

bar: 207.00...210.00 Pressure

Perforated plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Cutside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 840

Start of delivery

Prestroke mm: 0.3

(from BDC): +-0.02(0.04)

Start of delivery block mm: 1.7 Piston stroke

mm: +-0.02(0.06)

Outlet |

Injection-pump setting values Test specifications in parentheses

Timing-device travel

Speed 1/min: 850

Setting value mm: 3.70...4.10

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 850

Setting value bar: 5.90...6.50

Shutoff

electromagnet Volt: 12

Full-load del. w/out charge press.:

1/min: 1100 Speed

Del. quantity cm3/

1000s.: 90.50...91.50

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 4.0 1000s.: (4.5)

Low-idle speed regulation

1/min: 375

Del. quantity cm3/

1000s.: 22.00...28.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 5.5 100GS.: (7.0)

Full-load speed regulation

Speed 1/min: 1340

Del. quantity cm3/

1000s.: 28.00...34.00

Shutoff

electromagnet Volt: 12

Start:

1/min: 100 Speed

Del. quantity cm3/: 105.00...145.00 mind 1000s.: 105.0

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 1100 2nd speed

mm: 4.60...5.40 TD travel mm: (4.30...5.70)

Shutoff

electromagnet Volt: 12 3rd speed a 1/min: 850

TD travel mm: 3.704.10	∔ Shutoff
mm: (3.204.6	
Shutoff (J. 204.0	
	Del. quantity cm3/: 84.5087.50
electromagnet volt: 12	† 1000s.: (83.0089.00)
4th speed 1/min: 500	+ 12th speed 1/min: 1100
TD travel mm: 1.802.60	+ Shutoff
mm: (1.502.9	
Shutoff	Del. quyntity cm3/: 90.5091.50
electromagnet Volt: 12	10000 - (00.0 0/.0)
Treat wild let Anti: 15	10005.: (88.094.0)
Cimpliani	† 15th speed 1/min: 850
Supply-pump pressure characteri	stic:
	+ electromagnet Volt: 12
1st speed 1/min: 500	- Del. quantity cm3/: 94,5098.50
Supply-pump	10005.: (93.00100.00)
pressure bar: 4.304.90	
Shutoff Dan: 4.304.90	
	+ Shutoff
electromagnet Volt: 12	+ electromagnet Volt: 12
2nd speed 1/min: 850	+ Del. quantity cm3/: 82.0090.00
Supply-pump	1000\$.: (80,0092.00)
pressure bar: 5.906.50	1
Shutoff	
	Mech. shutoff:
electromagnet Volt: 12	+ Mech. Abstellung:
3rd speed 1/min: 1100	[
Supply-pump	+ 1st speed 1/min: 1250
pressure bar: 6.707.30	- Del. quantity cm3/: 0.003.00
Shutoff	1000s.: (0.003.00)
electromagnet Volt: 12	Shutoff
and grice vote. 12	1
Overlos mandes	+ electromagnet volt: 12
Overlow quantity at overflow va	lve: +
A - 1	+ Electr. shutoff:
1st speed 1/min: 500	
	T
Shutoff	I 1st speed 1/min: 375
	1st speed 1/min: 375
electromagnet Volt: 12	- Del. quantity cm3/: 0.003.00
electromagnet Volt: 12 Overflow : 41.7883.	+ Del. quantity cm3/: 0.003.00
electromagnet Volt: 12 Overflow : 41.7083 quantity cm3/10s: (26.7098	Del. quantity cm3/: 0.003.00 40 1000s.: (0.003.00) .40) Shutoff
electromagnet Volt: 12 Overflow: 41.7083. quantity: cm3/10s: (26.7098 2nd speed: 1/min: 1250	+ Del. quantity cm3/: 0.003.00
electromagnet Volt: 12 Overflow: 41.7083. quantity: cm3/10s: (26.7098 2nd speed: 1/min: 1250 Shutoff	Del. quantity cm3/: 0.003.00 40 1000s.: (0.003.00) .40) Shutoff
electromagnet Volt: 12 Overflow: 41.7083. quantity: cm3/10s: (26.7098 2nd speed: 1/min: 1250 Shutoff electromagnet Volt: 12	Del. quantity cm3/: 0.003.00 40
electromagnet Volt: 12 Overflow: 41.7083. quantity: cm3/10s: (26.7098 2nd speed: 1/min: 1250 Shutoff electromagnet Volt: 12 Overflow: 55.60139	Del. quantity cm3/: 0.003.00 40
electromagnet Volt: 12 Overflow : 41.7083. quantity cm3/10s: (26.7098 2nd speed 1/min: 1250 Shutoff electromagnet Volt: 12 Overflow : 55.60139	Del. quantity cm3/: 0.003.00 1000s.: (0.003.00) .40) Shutoff electromagnet volt: - Idle delivery:
electromagnet Volt: 12 Overflow: 41.7083. quantity: cm3/10s: (26.7098 2nd speed: 1/min: 1250 Shutoff electromagnet Volt: 12	Del. quantity cm3/: 0.003.00 1000s.: (0.003.00) Shutoff electromagnet volt: - Idle delivery: .00 4.00) 1st speed 1/min: 375
electromagnet Volt: 12 Overflow: 41.7083 quantity: cm3/10s: (26.7098 2nd speed: 1/min: 1250 Shutoff electromagnet Volt: 12 Overflow: 55.60139 quantity: cm3/10s: (40.6015)	Del. quantity cm3/: 0.003.00 1000s.: (0.003.00) Shutoff electromagnet volt: - Idle delivery: .00 4.00) 1st speed 1/min: 375 Shutoff
electromagnet Volt: 12 Overflow : 41.7083. quantity cm3/10s: (26.7098 2nd speed 1/min: 1250 Shutoff electromagnet Volt: 12 Overflow : 55.60139	Del. quantity cm3/: 0.003.00 1000s.: (0.003.00) Shutoff electromagnet volt: - Idle delivery: OD 4.00) 1st speed 1/min: 375 Shutoff electromagnet Volt: 12
electromagnet Volt: 12 Overflow: 41.7083 quantity: cm3/10s: (26.7098 2nd speed: 1/min: 1250 Shutoff electromagnet Volt: 12 Overflow: 55.60139 quantity: cm3/10s: (40.6015)	Del. quantity cm3/: 0.003.00 1000s.: (0.003.00) Shutoff electromagnet volt: - Idle delivery: OD 4.00) 1st speed 1/min: 375 Shutoff electromagnet Volt: 12
electromagnet Volt: 12 Overflow : 41.7083. quantity cm3/10s: (26.7098 2nd speed 1/min: 1250 Shutoff electromagnet Volt: 12 Overflow : 55.60139 quantity cm3/10s: (40.6015) Delivery-quant. and breakaway ch	Del. quantity cm3/: 0.003.00 1000s.: (0.003.00) Shutoff electromagnet volt: - Idle delivery: OD 4.00) 1st speed 1/min: 375 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 22.0028.00
electromagnet Volt: 12 Overflow : 41.7083 quantity cm3/10s: (26.7098 2nd speed 1/min: 1250 Shutoff electromagnet Volt: 12 Overflow : 55.60139 quantity cm3/10s: (40.6015) Delivery-quant. and breakaway cd	Del. quantity cm3/: 0.003.00 1000s.: (0.003.00) Shutoff electromagnet volt: - Idle delivery: OD 4.00) 1st speed 1/min: 375 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 22.0028.00 1000s.: (20.0030.00)
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electromagnet Volt: 12 Overflow: 41.7083 quantity: cm3/10s: (26.7098 2nd speed: 1/min: 1250 Shutoff electromagnet Volt: 12 Overflow: 55.60139 quantity: cm3/10s: (40.6015) Delivery-quant. and breakaway cd 2nd speed: 1/min: 1400 Shutoff electromagnet Volt: 12 Del. quantity: cm3/: 0.003.00	Del. quantity cm3/: 0.003.00 1000s.: (0.003.00) Shutoff electromagnet volt: - Idle delivery: .00 4.00) 1st speed 1/min: 375 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 22.0028.00 1000s.: (20.0030.00) Dispersion cm3/: 5.5 1000s.: (7.0) 2nd speed 1/min: 450 Shutoff
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electromagnet Volt: 12 Overflow: 41.7083 quantity: cm3/10s: (26.7098 2nd speed: 1/min: 1250 Shutoff electromagnet Volt: 12 Overflow: 55.60139 quantity: cm3/10s: (40.6015) Delivery quant. and breakaway cd 2nd speed: 1/min: 1400 Shutoff electromagnet Volt: 12 Del. quantity: cm3/: 0.003.00 1000s.: (0.003.00 5th speed: 1/min: 1340	Del. quantity cm3/: 0.003.00 1000s.: (0.003.00) Shutoff electromagnet volt: - Idle delivery: .00 4.00) 1st speed 1/min: 375 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 22.0028.00 1000s.: (20.0030.00) Dispersion cm3/: 5.5 1000s.: (7.0) 2nd speed 1/min: 450 Shutoff
electromagnet Volt: 12 Overflow : 41.7083 quantity cm3/10s: (26.7098 2nd speed 1/min: 1250 Shutoff electromagnet Volt: 12 Overflow : 55.60139 quantity cm3/10s: (40.6015) Delivery quant. and breakaway cd 2nd speed 1/min: 1400 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.003.00 1000s.: (0.003.00 5th speed 1/min: 1340 Shutoff	Del. quantity cm3/: 0.003.00 1000s.: (0.003.00) Shutoff electromagnet volt: - Idle delivery: .00 4.00) 1st speed 1/min: 375 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 22.0028.00 1000s.: (20.0030.00) Dispersion cm3/: 5.5 1000s.: (7.0) 2nd speed 1/min: 450 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.002.00
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electromagnet Volt: 12 Overflow : 41.7083 quantity cm3/10s: (26.7098 2nd speed 1/min: 1250 Shutoff electromagnet Volt: 12 Overflow : 55.60139 quantity cm3/10s: (40.6015) Delivery-quant. and breakaway ci 2nd speed 1/min: 1400 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.003.00 1000s.: (0.003.00 5th speed 1/min: 1340 Shutoff electromagnet Volt: 12	Del. quantity cm3/: 0.003.00 1000s.: (0.003.00) Shutoff electromagnet volt: - Idle delivery: .00 4.00) 1st speed 1/min: 375 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 22.0028.00
electromagnet Volt: 12 Overflow : 41.7083. quantity cm3/10s: (26.7098 2nd speed 1/min: 1250 Shutoff electromagnet Volt: 12 Overflow : 55.60139 quantity cm3/10s: (40.6015) Delivery-quant. and breakaway cd 2nd speed 1/min: 1400 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.003.00 1000s.: (0.003.00 5th speed 1/min: 1340 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 28.0034.00	Del. quantity cm3/: 0.003.00 1000s.: (0.003.00) Shutoff electromagnet volt: - Idle delivery: .00 4.00)
electromagnet Volt: 12 Overflow: 41.7083. quantity: cm3/10s: (26.7098 2nd speed: 1/min: 1250 Shutoff electromagnet Volt: 12 Overflow: 55.60139 quantity: cm3/10s: (40.6015) Delivery-quant. and breakaway cd 2nd speed: 1/min: 1400 Shutoff electromagnet Volt: 12 Del. quantity: cm3/: 0.003.00 1000s: (0.003.00 Sth speed: 1/min: 1340 Shutoff electromagnet Volt: 12 Del. quantity: cm3/: 28.0034.00 1000s: (25.0037)	Del. quantity cm3/: 0.003.00 1000s.: (0.003.00) Shutoff electromagnet volt: - Idle delivery: .00 4.00) 1st speed 1/min: 375 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 22.0028.00 1000s.: (20.0030.00) Dispersion cm3/: 5.5 1000s.: (7.0) 2nd speed 1/min: 450 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.002.00 1000s.: (0.002.00) Sth speed 1/min: 300 Shutoff electromagnet Volt: -
electromagnet Volt: 12 Overflow: 41.7083. quantity: cm3/10s: (26.7098 2nd speed: 1/min: 1250 Shutoff electromagnet Volt: 12 Overflow: 55.60139 quantity: cm3/10s: (40.6015) Delivery-quant. and breakaway cd 2nd speed: 1/min: 1400 Shutoff electromagnet Volt: 12 Del. quantity: cm3/: 0.003.00 1000s.: (0.003.00 Shutoff electromagnet Volt: 12 Del. quantity: cm3/: 28.0034.00 1000s.: (25.0037 8th speed: 1/min: 1290	Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Shutoff electromagnet volt: - Idle delivery: Output 1st speed 1/min: 375 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 22.0028.00 1000S.: (20.0030.00) Dispersion cm3/: 5.5 1000S.: (7.0) 2nd speed 1/min: 450 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.002.00 1000S.: (0.002.00) Shutoff electromagnet Volt: - Del. quantity cm3/: 45.0053.00
electromagnet Volt: 12 Overflow : 41.7083. quantity cm3/10s: (26.7098 2nd speed 1/min: 1250 Shutoff electromagnet Volt: 12 Overflow : 55.60139 quantity cm3/10s: (40.6015) Delivery-quant. and breakaway cd 2nd speed 1/min: 1400 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.003.00 1000s.: (0.003.00 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 28.0034.00 1000s.: (25.0037 8th speed 1/min: 1290 Shutoff	Del. quantity cm3/: 0.003.00 1000s.: (0.003.00) Shutoff electromagnet volt: - Idle delivery: .00 4.00) 1st speed 1/min: 375 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 22.0028.00 1000s.: (20.0030.00) Dispersion cm3/: 5.5 1000s.: (7.0) 2nd speed 1/min: 450 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.002.00 1000s.: (0.002.00) Sth speed 1/min: 300 Shutoff electromagnet Volt: -
electromagnet Volt: 12 Overflow: 41.7083. quantity: cm3/10s: (26.7098 2nd speed: 1/min: 1250 Shutoff electromagnet Volt: 12 Overflow: 55.60139 quantity: cm3/10s: (40.6015) Delivery quant. and breakaway cd 2nd speed: 1/min: 1400 Shutoff electromagnet Volt: 12 Del. quantity: cm3/: 0.003.00 1000s.: (0.003.00 Shutoff electromagnet Volt: 12 Del. quantity: cm3/: 28.0034.00 1000s.: (25.0037) 8th speed: 1/min: 1290 Shutoff electromagnet Volt: 12	Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Shutoff electromagnet volt: - Idle delivery: .00 4.00) 1st speed 1/min: 375 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 22.0028.00 1000S.: (20.0030.00) Dispersion cm3/: 5.5 1000S.: (7.0) 2nd speed 1/min: 450 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.002.00 1000S.: (0.002.00) 5th speed 1/min: 300 Shutoff electromagnet Volt: - Del. quantity cm3/: 45.0053.00 1000S.: (43.0055.00)
electromagnet Volt: 12 Overflow: 41.7083. quantity: cm3/10s: (26.7098 2nd speed: 1/min: 1250 Shutoff electromagnet Volt: 12 Overflow: 55.60139 quantity: cm3/10s: (40.6015) Delivery quant. and breakaway cd 2nd speed: 1/min: 1400 Shutoff electromagnet Volt: 12 Del. quantity: cm3/: 0.003.00 1000s.: (0.003.00 Shutoff electromagnet Volt: 12 Del. quantity: cm3/: 28.0034.00 1000s.: (25.0037) 8th speed: 1/min: 1290 Shutoff electromagnet Volt: 12	Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Shutoff electromagnet volt: - Idle delivery: .00 4.00) 1st speed 1/min: 375 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 22.0028.00 1000S.: (20.0030.00) Dispersion cm3/: 5.5 1000S.: (7.0) 2nd speed 1/min: 450 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.002.00 1000S.: (0.002.00) 5th speed 1/min: 300 Shutoff electromagnet Volt: - Del. quantity cm3/: 45.0053.00 1000S.: (43.0055.00)
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electromagnet Volt: 12 Overflow : 41.7083. quantity cm3/10s: (26.7098 2nd speed 1/min: 1250 Shutoff electromagnet Volt: 12 Overflow : 55.60139 quantity cm3/10s: (40.6015) Delivery-quant. and breakaway cd 2nd speed 1/min: 1400 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.003.00 1000s.: (0.003.00 5th speed 1/min: 1340 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 28.0034.0 1000s.: (25.0037 8th speed 1/min: 1290 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 69.0075.0 1000s.: (66.0075.0	Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Shutoff electromagnet volt: - Idle delivery: .00 4.00) 1st speed 1/min: 375 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 22.0028.00 1000S.: (20.0030.00) Dispersion cm3/: 5.5 1000S.: (7.0) 2nd speed 1/min: 450 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.002.00 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.002.00 5th speed 1/min: 300 Shutoff electromagnet Volt: - Del. quantity cm3/: 45.0053.00 Automatic starting fuel delivery:

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 105.00...145.00 1000s.: (105.00...145.00)

2nd speed 1/min: 250

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 65.00...105.00 1000s.: (65.00...105.00)

4th speed 1/min: 100

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 105.00...145.00 1000s.: (105.00...145.00)

Shutoff electromagnet:

Cut-in

min voltage : 10.0 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: -

KF mm: 5.0...5.4 MS1 mm: 1.3...1.5 mm: 35.8...37.8 mm: 44.1...49.7 Ya Yb

Remarks:

: CDC # 390 6316

Note inst. in remarks column

Test scheet : CDC

Edition : 29.06.93

replaces

Calibrating oil : ISO-4113

Injection pump : VE4/12F1250R424 Type number : 0 460 424 079

Customer Part-No. :

Customer-specific information

Customer

Engine : 4 BTAA 3.9

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 109 assembly

Opening

bana 207.00...210.00 Pressure

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 840

Start of delivery Prestroke mm: -

(from BDC): -

Start of delivery block Piston stroke mm: 1.25

mm: +-0.02(0.06)

Outlet

Injection pump setting values Test specifications in parentheses

Timing-device travel

Speed 1/min: 850 Charge press. hPa: 1000

Setting value mm: 1.00...1.40

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1100 Speed Charge press hPa: 1000

Setting value bar: 6.90...7.50

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 850 Charge press. hPa: 1000

Del. quantity cm3/ 1000s.: 84.50...85.50

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 5.0 1000s.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 500

Del. quantity cm3/ 1000s.: 52.50...53.50

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 5.0 1000s.: (6.0)

Low-idle speed regulation

Speed 1/min: 400

Del. quantity cm3/

1000s.: 14.50...18.50

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 5.5 1000s.: (7.0)

Full-load speed regulation

Speed 1/min: 1325 Charge press hPa: 1000

Del. quantity cm3/ 1000s.: 72.00...78.00

Shutoff

electromagnet Volt: 12

Start:

Speed 1/min: 100 Del. quantity cm3/: 115.00...165.00

1000s.: 115.0

Shutoff electromagnet Volt: 12 Overlow quantity at overflow valve: Inspection-pump test specifications Test specifications in parentheses 1/min: 500 1st speed Charge press. hPa: - Shutoff Timing-device characteristic: electromagnet Volt: 12 Overflow : 41.70...83.40 quantity cm3/10s: (26.70...98.40) 2nd speed 1/min: 1250 2nd speed 1/min: 1250 hPa: 1000 Charge press TD travel mm: 2.10...2.90 Charge press. hPa: 1000 mm: (1.80...3.20) Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 3rd speed 1/min: 850 Charge press hPa: 1000 Overflow : 55.60...139.00 quantity cm3/10s: (40.60...154.00) mm: 1.00...1.40 TD travel Delivery-quant. and breakaway char.: mm: (0.50...1.90) Shutoff electromagnet Volt: 12 4th speed 1/min: 750 1nd speed 1/min: 700 Charge-air pressure-setting point hPa: 300 Charge press hPa: 1000 TD travel mm: 0.30...1.10 LDA-stroke mm: 6.7 Shutoff Shutoff electromagnet Volt: 12 8th speed 1/min: 450 electromagnet Volt: 12 Del. quantity cm3/: 69.00...70.00 1000s.: (65.50...73.50) Charge press. hPa: -TD travel mm: 2.00...3.00 1/min: 1500 2nd speed mm: (1.80...3.20) Charge press. hPa: 1000 KSB/AFB Shutoff valve Volt: 12 electromagnet Volt: 12 Del. quantity cm3/: 0.00...3.00 Shutoff electromagnet Volt: 12 1000s.: (0.00...3,00) 3rd speed 1/min: 1440 Charge press. hPa: 1000 Shutoff Supply-pump pressure characteristic: electromagnet Volt: 12
Del. quantity cm3/: 15.00...45.00
1000S.: (15.00...45.00)
5th speed 1/min: 1325
Charge press. hPa: 1000
Shutoff 1st speed 1/min: 850 Charge press. hPa: 1000 Supply-pump pressure bar: 5.50...6.10 Shutoff electromagnet Volt: 12 2nd speed 1/min: 1100 Charge press. hPa: 1000 electromagnet Volt: 12 Del. quantity cm3/: 72.00...78.00 Supply-pump 1000s.: (69.00...81.00) pressure bar: 6.90...7.50 1/min: 1250 9th speed Shutoff Charge press. hPa: 1000 Shutoff electromagnet Volt: 12 3rd speed 1/min: 1250 Charge press. hPa: 1000 Supply-pump pressure bar: 7.50...8.10 Shutoff Charge press. hPa: 1000 electromagnet Volt: 12 Shutoff 1/min: 500 4th speed electromagnet Volt: 12 Charge press. hPa: 1000 Del. quantity cm3/: 85.00...90.00 1000s.: (83.50...91.50) Supply-pump bar: 4.00...4.60 pressure 1/min: 850 12th speed Shutoff Charge press. hPa: 1000 electromagnet Volt: 12

Shutoff electromagnet Volt: 12 Del. quyntity cm3/: 85.50...86.50 1000s.: (83.00...89.00) 1/min: 500 18th speed Charge press. hPa: -Shutoff electromagnet Volt: 12 Del. quantity cm3/: 53.50...54.50 1000s.: (50.00...58.00) Mech. shutoff: Mech. Abstellung: 1/min: 1250 1st speed Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Shutoff electromagnet volt: 12 Electr. shutoff: 1st speed 1/min: 400 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Shutoff electromagnet volt: -Idle delivery: 1st speed 1/min: 400 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 14.50...18.50 1000s.: (11.50...21.50) cm3/: 5.5 Dispersion 1000s.: (7.8) 1/min: 490 2nd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Automatic starting fuel delivery: 1st speed 1/min: 130 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 140.00...190.00 1000s.: (140.00...190.00) 2nd speed 1/min: 240 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 40.00...70.00 1000s.: (40.00...70.00) 1/min: 100 4th speed Shutoff

Del. quantity cm3/: 115.00...165.00 1000s.: (115.00...165.00) Shutoff electromagnet: Cut-in : 10.0 min voltage Rated voltage : 12.0 Mounting and assembly dimensions: Designation mm: 3.4...3.6 K KF mm: KOT mm: 1.0...1.4 MS SVS max. mm: mm: 6.7 LDA stroke mm: 34.8...38.8 Ya Yb mm: 42.7...47.9 Remarks:

electromagnet Volt: 12

Note inst. in remarks column

Test scheet : CAS : 29.06.93 Edition

replaces

Calibrating oil : ISO-4113

Injection pump : VE4/12F1000R378-10 Type number : 0 460 424 085

Customer Part-No. :

Customer-specific information

Customer : CASE

Engine : 4 T 390

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil return temo.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 027 assembly

Openina

bar: 250.00...253.00 Pressure

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 840 x Length

Start of delivery

Prestroke mm: 0.3

(from BDC): +0.02(0.04)

Start of delivery block Piston stroke mm: 1.8

mm: +-0.02(0.06)

Outlet.

Injection pump setting values Test specifications in parentheses

Timing-device travel

Speed 1/min: 900 Setting value mm: 2.40...2.80

Shutoff

electromagnet Volt: 24

Supply-pump pressure

1/min: 900 Speed

Setting value bar: 4.00...4.60

Shutoff

electromagnet Volt: 24

Full-load del. w/out charge press.:

1/min: 900

Del. quantity cm3/

1000s.: 69.0...70.0

Shutoff

electromagnet Volt: 24 Dispersion cm3/: 4.0

1000s.: (4.5)

Low-idle speed regulation

Speed 1/min: 450

Del. quantity cm3/

1000s.: 7.00...13.00

Shutoff

electromagnet Volt: 24 Del. quantity cm3/: 5.5 1000s.: (7.0)

Full-load speed regulation

1/min: 1050 Speed

Del. quantity cm3/

1000s.: 37.50...43.50

Shutoff

electromagnet Volt: 24

Start:

Speed 1/min: 100

Del. quantity cm3/: 80.00...120.00

1000s.: 80.00

Shutoff

electromagnet Volt: 24

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 1000 2nd speed

mm: 2.70...3.50 TD travel

mm: (2.40...3.80)

Shutoff

electromagnet Volt: 24 3rd speed 1/min: 900

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TD travel mm: 2.40...2.80 Shutoff mm: (1.90...3.30) electromagnet Volt: 24 Del. quantity cm3/: 67.00...70.00 1000s.: (65.50...71.50) 10th speed 1/min: 750 Shutoff electromagnet Volt: 24 4th speed 1/min: 750 mm: 1.30...2.10 TD travel Shutoff mm: (1.00...2.40)electromagnet Volt: 24 Del. quantity cm3/: 72.50...75.50 Shutoff 1000s.: (70.50...77.50) electromagnet Volt: 24 1/min: 900 12th speed Supply-pump pressure characteristic: Shutoff electromagnet Volt: 24 Del. quyntity cm3/: 69.00...70.00 1000s.: (66.50...72.50) 20th speed 1/min: 500 1/min: 500 1st speed Supply-pump bar: 2.20...2.80 pressure 20th speed Shutoff Shutoff electromagnet Volt: 24 2nd speed 1/min: 900 electromagnet Volt: 24 Del. quantity cm3/: 71.50...79.50 Supply-pump 1000s.: (69.50...81.50) bar: 4.00...4.60 pressure Shutoff Mech. shutoff: electromagnet Volt: 24 3rd speed 1/min: 1000 Electr. shutoff: Supply-pump pressure bar: 4.40...5.00 Shutoff electromagnet Volt: 24 10**0**0s.: (0.00...3.00) Shutoff Overlow quantity at overflow valve: electromagnet volt: -1/min: 500 1st speed Idle delivery: Shutoff 1/min: 450 electromagnet Volt: 24 1st speed : 41.70...83.40 Overflow Shutoff cm3/10s: (26.70...98.40) 1/min: 1000 electromagnet Volt: 24 Del. quantity cm3/: 7.00...13.00 1000S.: (5.00...15.00) quantity 2nd speed Shutoff electromagnet Volt: 24 Dispersion cm3/: 5.5: 55.60...139.00 Overflow 1000s.: (7.0) 1/min: 500 cm3/10s: (40.60...154.00) *quantity* 2nd speed Shutoff Delivery-quant. and breakaway char.: electromagnet Volt: 24 Del. quantity cm3/: 0.00...4.00 1000s.: (0.00...4.00) 1/min: 1130 2nd speed Shutoff Automatic starting fuel delivery: electromagnet Volt: 24
Del. quantity cm3/: 0.00...3.00
1000s.: (0.00...3.00)
3rd speed 1/min: 1070 1st speed 1/min: 130 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 95.00...135.00 1000s.: (95.00...135.00) Shutoff electromagnet Volt: 24 Del. quantity cm3/: 15.00...45.00 1000s.: (15.00...45.00) 2nd speed 1/min: 240 1/min: 1050 5th speed Shutoff electromagnet Volt: 24 Del. quantity cm3/: 55.00...85.00 1000s.: (55.00...85.00) Shutoff electromagnet Volt: 24
Del. quantity cm3/: 37.50...43.50
1000s.: (34.50...46.50) 9th speed 1/min: 1000 4th speed 1/min: 100

Shutoff

electromagnet Volt: 24 Del. quantity cm3/: 80.00...120.00 1000S.: (80.00...120.00)

Shutoff electromagnet:

Cut-in

: 20.0 : 24.0 min voltage Rated voltage

Mounting and assembly dimensions:

Designation

mn: -

mm: 5.2...5.6 mm: 1.3...1.5 mm: 3.3 KF MS SVS max.

mm: 34.8...38.8 mm: 38.6...44.2 Υa Yb

Remarks:

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Note inst. in remarks column

Test scheet : CUM

Edition : 29.06.93 replaces : 20.10.89 Calibrating oil : ISO-4113

Injection pump : VE6/12F1325R367-1
Type number : 0 460 426 146

Customer Part-No. :

Customer-specific information

Customer : CI

Engine : 6 BT 5.9 IND.

Power KW: 97 Speed 1/min: 2650

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening |

Pressure bar: 250.00...253.00

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 840

Start of delivery

Prestroke mm: 0.3

(from BDC); +-0.02(0.04)

Start of delivery block Piston stroke mm: 1.5

mm: +-0.02(0.06)

Outlet : D

Injection-pump setting values Test specifications in parentheses Timing-device travel

Speed 1/min: 850

Setting value mm: 3.90...4.30

Shutoff

electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 850

Setting value bar: 3.90...4.50

Shutoff

electromagnet Volt: 24

Full-load del. w/out charge press.:

Speed 1/min: 1100

Del. quantity cm3/

1000s.: 56.0...57.0

Shutoff

electromagnet Volt: 24 Dispersion cm3/: 4.0 1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 375

Del. quantity cm3/

1000s.: 8.00...14.00

Shutoff

electromagnet Volt: 24 Del. quantity cm3/: 5.5 1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1400

Del. quantity cm3/

1000s.: 36.00...42.00

Shutoff

electromagnet Volt: 24

Start:

Speed 1/min: 100

Del. quantity cm3/: 60.00...110.00

mind 1000s.: 60.00

Shutoff

electromagnet Volt: 24

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100

TD travel mm: 5.90...6.70

mm: (5.60...7.00)

Shutoff	+ Del. quantity cm3/: 36.0042.00
electromagnet Volt: 24	† 1000s.: (33.0045.00)
3rd speed 1/min: 850	+ 9th speed 1/min: 1325
TD travel mm: 3.904.30	+ Shutoff
mm: (3.404.80)	+ electromagnet Volt: 24
Shutoff	+ Del. quantity cm3/: 52.5055.50
electromagnet Volt: 24	1000s.: (51.0057.00)
4th speed 1/min: 500	12th speed 1/min: 1100
TD travel mm: 1.302.10	+ Shutoff
mm: (1.002.40)	electromagnet Volt: 24
Shutoff	Del. quyntity cm3/: 56.0057.00
electromagnet Volt: 24	10008:: (53,5059.50)
etectionagnet vott. 24	
Simply-nime programs sharestandation	15th speed 1/min: 850
Supply-pump pressure characteristic:	+ Shutoff
1-t amond - 1/min. 500	+ electromagnet Volt: 24
1st speed 1/min: 500	+ Del. quantity cm3/: 53.5057.50
Supply-pump	1000\$.: (51.5059.50)
pressure bar: 2.503.10	+ 20th speed 1/min: 500
Shutoff	+ Shutoff
electromagnet Volt: 24	+ electromagnet Volt: 24
2nd speed 1/min: 850	+ Del. quantity cm3/: 42.0050.00
Supply-pump	+ 1000s.: (40.0052.00)
pressure bar: 3.904.50	+
Shutoff	+ Mech. shutoff:
electromagnet Volt: 24	+ Mech. Abstellung:
3rd speed 1/min: 1100	- The office of
Supply-pump	1st speed 1/min: 1325
pressure bar: 4.905.50	Del. quantity cm3/: 0.003.00
Shutoff	+ 1000s.: (0.003.00)
electromagnet Volt: 24	+ Shutoff
etectionagnet vott. 24	
Our male and a management of the control of the con	+ electromagnet volt: 24
Overlow quantity at overflow valve:	†
4-t	† Electr. shutoff:
1st speed 1/min: 500	ή
Shutoff	+ 1st speed 1/min: 375
electromagnet Volt: 24	+ Del. quantity cm3/: 0.003.00
Overflow : 41.7083.40	+ 1000s.: (0.003.00)
quantity cm3/10s: (26.7098.40)	→ Shutoff
2nd speed 1/min: 1325	+ electromagnet volt: -
Shutoff	
-1	+
electromagnet volt: 24	+
electromagnet Volt: 24 Overflow : 55.60139.00	Idle delivery:
Overflow : 55.60139.00	Idle delivery:
	Idle delivery: 1st speed 1/min: 375
Overflow : 55.60139.00 quantity cm3/10s: (40.60154.00)	Idle delivery: 1st speed 1/min: 375 Shutoff
Overflow : 55.60139.00	Idle delivery: 1st speed 1/min: 375 Shutoff electromagnet Volt: 24
Overflow : 55.60139.00 quantity cm3/10s: (40.60154.00)	Idle delivery: 1st speed 1/min: 375 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 8.0014.00
Overflow: 55.60139.00 quantity cm3/10s: (40.60154.00) Delivery-quant. and breakaway char.:	Idle delivery: 1st speed 1/min: 375 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 8.0014.00 1000s.: (6.0016.00)
Overflow: 55.60139.00 quantity cm3/10s: (40.60154.00) Delivery-quant. and breakaway char.: 2nd speed: 1/min: 1520	Idle delivery: 1st speed 1/min: 375 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 8.0014.00 1000s.: (6.0016.00) Dispersion cm3/: 5.5
Overflow : 55.60139.00 quantity cm3/10s: (40.60154.00) Delivery-quant. and breakaway char.: 2nd speed 1/min: 1520 Shutoff	Idle delivery: 1st speed 1/min: 375 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 8.0014.00 1000S.: (6.0016.00) Dispersion cm3/: 5.5 1000S.: (7.0)
Overflow : 55.60139.00 quantity cm3/10s: (40.60154.00) Delivery-quant. and breakaway char.: 2nd speed 1/min: 1520 Shutoff electromagnet Volt: 24	Idle delivery: 1st speed 1/min: 375 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 8.0014.00 1000s.: (6.0016.00) Dispersion cm3/: 5.5 1000s.: (7.0) 2nd speed 1/min: 455
Overflow : 55.60139.00 quantity cm3/10s: (40.60154.00) Delivery-quant. and breakaway char.: 2nd speed 1/min: 1520 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 0.003.00	Idle delivery: 1st speed 1/min: 375 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 8.0014.00 1000s.: (6.0016.00) Dispersion cm3/: 5.5 1000s.: (7.0) 2nd speed 1/min: 455 Shutoff
Overflow: 55.60139.00 quantity cm3/10s: (40.60154.00) Delivery-quant. and breakaway char.: 2nd speed 1/min: 1520 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 0.003.00 1000s.: (0.003.00)	Idle delivery: 1st speed 1/min: 375 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 8.0014.00 1000s.: (6.0016.00) Dispersion cm3/: 5.5 1000s.: (7.0) 2nd speed 1/min: 455 Shutoff electromagnet Volt: 24
Overflow: 55.60139.00 quantity cm3/10s: (40.60154.00) Delivery-quant. and breakaway char.: 2nd speed 1/min: 1520 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 0.003.00 1000s.: (0.003.00) 3rd speed 1/min: 1440	Idle delivery: 1st speed 1/min: 375 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 8.0014.00 1000S.: (6.0016.00) Dispersion cm3/: 5.5 1000S.: (7.0) 2nd speed 1/min: 455 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 0.004.00
Overflow: 55.60139.00 quantity cm3/10s: (40.60154.00) Delivery-quant. and breakaway char.: 2nd speed 1/min: 1520 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 0.003.00 1000s.: (0.003.00) 3rd speed 1/min: 1440 Shutoff	Idle delivery: 1st speed 1/min: 375 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 8.0014.00 1000s.: (6.0016.00) Dispersion cm3/: 5.5 1000s.: (7.0) 2nd speed 1/min: 455 Shutoff electromagnet Volt: 24
Overflow : 55.60139.00 quantity cm3/10s: (40.60154.00) Delivery-quant. and breakaway char.: 2nd speed 1/min: 1520 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) 3rd speed 1/min: 1440 Shutoff electromagnet Volt: 24	Idle delivery: 1st speed 1/min: 375 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 8.0014.00 1000S.: (6.0016.00) Dispersion cm3/: 5.5 1000S.: (7.0) 2nd speed 1/min: 455 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 0.004.00
Overflow : 55.60139.00 quantity cm3/10s: (40.60154.00) Delivery-quant. and breakaway char.: 2nd speed 1/min: 1520 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 0.003.00 1000s.: (0.003.00) 3rd speed 1/min: 1440 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 15.0045.00	Idle delivery: 1st speed 1/min: 375 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 8.0014.00 1000S.: (6.0016.00) Dispersion cm3/: 5.5 1000S.: (7.0) 2nd speed 1/min: 455 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 0.004.00
Overflow : 55.60139.00 quantity cm3/10s: (40.60154.00) Delivery-quant. and breakaway char.: 2nd speed 1/min: 1520 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 0.003.00 1000s.: (0.003.00) 3rd speed 1/min: 1440 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 15.0045.00 1000s.: (15.0045.00)	Idle delivery: 1st speed 1/min: 375 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 8.0014.00 1000S.: (6.0016.00) Dispersion cm3/: 5.5 1000S.: (7.0) 2nd speed 1/min: 455 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 0.004.00 1000S.: (0.004.00)
Overflow : 55.60139.00 quantity cm3/10s: (40.60154.00) Delivery-quant. and breakaway char.: 2nd speed 1/min: 1520 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 0.003.00 1000s.: (0.003.00) 3rd speed 1/min: 1440 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 15.0045.00	Idle delivery: 1st speed 1/min: 375 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 8.0014.00 1000s.: (6.0016.00) Dispersion cm3/: 5.5 1000s.: (7.0) 2nd speed 1/min: 455 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 0.004.00 1000s.: (0.004.00) Automatic starting fuel delivery:
Overflow : 55.60139.00 quantity cm3/10s: (40.60154.00) Delivery-quant. and breakaway char.: 2nd speed 1/min: 1520 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 0.003.00 1000s.: (0.003.00) 3rd speed 1/min: 1440 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 15.0045.00 1000s.: (15.0045.00)	Idle delivery: 1st speed 1/min: 375 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 8.0014.00 1000s.: (6.0016.00) Dispersion cm3/: 5.5 1000s.: (7.0) 2nd speed 1/min: 455 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 0.004.00 1000s.: (0.004.00) Automatic starting fuel delivery:

Del. quantity cm3/: 65.00...115.00 1000S.: (65.00...115.00)

1/min: 250 2nd speed

Shutoff

electromagnet Volt: 24 Del. quantity cm3/: 15.00...65.00 1000S.: (15.00...65.00)

4th speed 1/min: 100

Shutoff

electromagnet Volt: 24

Del. quantity cm3/: 60.00...110.00

1000s.: (60.00...110.00)

Shutoff electromagnet:

Cut-in

min voltage : 20.0 : 24.0 Rated voltage

Mounting and assembly dimensions:

Designation

K mm: -

KF mm: 5.0...5.4

mm: 1.3...1.7 MS

SVS max. mm: 1.3

mm: 34.8...38.8 mm: 37.6...43.4 Ya Yb

Remarks:

: C.D.C. # 391 6904

Note inst. in remarks column

Test scheet : CUM

Edition : 14.04.92 replaces : 29.06.93 Calibrating oil : ISO-4113

Injection pump : VE6/12F1100R402 Type number : 0 460 426 166

Customer Part-No. :

Customer-specific information

Customer : CDC

Engine : 6 BTA- 590 I

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening |

Pressure bar: 250.00...253.00

Perforated plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 840

x Length

Start of delivery

Prestroke mm: 0.3

(from BDC): +-0.02(0.04)

Start of delivery block

Piston stroke mm: 1.5

mm: +-0.02(0.06)

Outlet

Injection-pump setting values

Test specifications in parentheses

Timing-device travel

1/min: 900 Speed Charge press. hPa: 1000

Setting value mm: 4.80...5.20

Shutoff

electromagnet Voit: 24

Supply-pump pressure

Speed 1/min: 900 Charge press hPa: 1000

Setting value bar: 4.70...5.30

Shutoff

electromagnet Volt: 24

Full-load del. with charge press.:

1/min: 750 Speed Charge press. hPa: 1000

Del. quantity cm3/

1000s.: 71.50...72.50

Shutoff

electromagnet Volt: 24 Dispersion cm3/: 4.0 1000s.: (4.5)

Full-load del. w/out charge press.:

1/min: 700

Del. quantity cm3/

1000s.: 51.00...52.00

Shutoff

electromagnet Volt: 24

Low-idle speed regulation

1/min: 400 Speed

Del. quantity cm3/

1000s.: 7.00...13.00

Shutoff

electromagnet Volt: 24 Del. quantity cm3/: 5.5

1000s.: (7.0)

Full-load speed regulation

1/min: 1180 Speed Charge press hPa: 1000

Del. quantity cm3/

1000s.: 47.00...53.00

Shutoff

electromagnet Volt: 24

Start:

Speed 1/min: 100 Del. quantity cm3/: 65.00...115.00

1000s.: 65.00 mind

Shutoff

electromagnet Volt: 24

Inspection-pump test specifications Delivery-quant. and breakaway char.: Test specifications in parentheses Timing-device characteristic: 1/min: 700 1nd speed Charge-air pressure-setting hPa: 350 2nd speed 1/min: 1100 point Charge press TD travel hPa: 1000 LDA-stroke mm: 5.0 mm: 6.20...7.00 mm: (5.90...7.30) Shutoff electromagnet Volt: 24
Del. quantity cm3/: 64.50...65.50
1000S.: (61.00...69.00)
2nd speed 1/min: 1250
Charge press. hPa: 1000
Shutoff Shutoff electromagnet Volt: 24 3rd speed 1/min: 900 Charge press hPa: 1000 mm: 4.80...5.20 mm: (4.30...5.70) TD travel electromagnet Volt: 24
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
3rd speed 1/min: 1200
Charge press. hPa: 1000
Shutoff Shutoff electromagnet Volt: 24 4th speed 1/min: 750 Charge press hPa: 1000 mm: 3.50...4.30 mm: (3.20...4.60) TD travel electromagnet Volt: 24 Del. quantity cm3/: 15.00...45.00 1000s.: (15.00...45.00) Shutoff electromagnet Volt: 24 1/min: 1180 5th speed Supply-pump pressure characteristic: Charge press. hPa: 1000 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 47.00...53.00 1000s.: (44.00...56.00) 1st speed 1/min: 750 Charge press. hPa: 1000 Supply-pump pressure bar: 4.00...4.60 1/min: 1100 9th speed Charge press. hPa: 1000 Shutoff Shutoff electromagnet Volt: 24 2nd speed 1/min: 900 electromagnet Volt: 24 Charge press. hPa: 1000 Del. quantity cm3/: 59.50...62.50 1000s.: (58.00...64.00) Supply-pump 10th speed 1/min: 900 Charge press. hPa: 1000 Shutoff bar: 4.70...5.30 pressure Shutoff electromagnet Volt: 24 3rd speed 1/min: 1100 electromagnet Volt: 24 Del. quantity cm3/: 61.50...64.50 1000s.: (59.50...66.50) 12th speed 1/min: 750 Charge press. hPa: 1000 Supply-pump pressure bar: 5.50...6.10 12th speed Shutoff Charge press. hPa: 1000 electromagnet Volt: 24 Shutoff electromagnet Volt: 24
Del. quyntity cm3/: 71.50...72.50
1000S.: (69.00...75.00)
18th speed 1/min: 700 Overlow quantity at overflow valve: 1st speed 1/min: 750 Charge press. hPa: -Charge press. hPa: -Shutoff Shutoff electromagnet Volt: 24 Del. quantity cm3/: 51.00...52.00 1000s.: (47.50...55.50) electromagnet Volt: 24 : 41.70...83.40 Overflow cm3/10s: (26.70...98.40) quantity 1/min: 1100 2nd speed Charge press. hPa: 1000 Mech. shutoff: Shutoff Mech. Abstellung: electromagnet Volt: 24 Overflow : 55.60...139.00 1/min: 1100 1st speed

Charge press. hPa: 1000

quantity cm3/10s: (40.60...154.00)

Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Shutoff electromagnet volt: 24 Electr. shutoff: 1st speed 1/min: 400 Charge press. hPa: -Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Shutoff electromagnet volt: -Idle delivery: 1/min: 400 1st speed Shutoff electromagnet Volt: 24 Del. quantity cm3/: 7.00...13.00 1000s.: (5.00...15.00) cm3/: 5.5 Dispersion 1000s.: (7.0) 1/min: 500 2nd speed Shutoff electromagnet Volt: 24 Del. quantity cm3/: 0.00...4.00 1000s.: (0.00...4.00) Automatic starting fuel delivery: 1st speed 1/min: 250 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 70.00...120.00 1000s.: (70.00...120.00) 2nd speed 1/min: 450 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 10.00...50.00 1000s.: (10.00...50.00) 4th speed 1/min: 100 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 65.00...115.00 1000s.: (65.00...115.00) Shutoff electromagnet: Cut-in : 20.0 : 24.0 min voltage Rated voltage Mounting and assembly dimensions: Designation

mm: 5.0...5.4

MS mm: 1.3...1.7 LDA stroke mm: 5.0 Ya mm: 34.8...38.8 Yb mm: 40.2...45.8

Remarks:

: CDC # 391 7562

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut

Heavy-duty fuel-injection pump for DI-engines: only test using timing-device-travel measuring device with metal jacket

K KF

Note inst. in remarks column

Test scheet : CDC

Edition : 29.06.93

replaces

Calibrating oil : ISO-4113

Injection pump : VE6/12F1250R498-1

: 0 460 426 212 Type number

Customer Part-No. :

Customer-specific information

Customer

Engine

: 6 BTAA 5,9B

Power

KW: 100

1/min: 1250 Speed

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil

return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 109 assembly

Opening

bar: 207.00...210.00 Pressure

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00

x Wall thickness : 2.00

mm: 840 x Length

Start of delivery

Prestroke mm: -

(from BDC): -

Start of delivery block

Piston stroke mm: 1.15

mm: +-0.02(0.06)

Outlet

; D

Injection-pump setting values

Test specifications in parentheses

Timing-device travel

1/min: 1000 Speed

Charge press. hPa: 1000

Setting value mm: 1.50...1.90

electromagnet Volt: 24

Supply-pump pressure

1/min: 1000 Speed Charge press hPa: 1000

Setting value bar: 6.30...6.90

Shutoff

electromagnet Volt: 24

Full-load del. with charge press.:

1/min: 850

Charge press. hPa: 1000

Del. quantity cm3/

1000s.: 71.50...72.50

Shutoff

electromagnet Volt: 24 Dispersion cm3/: 5.0

1000s.: (5.0)

Full-load del. w/out charge press.:

1/min: 500 Speed

Del. quantity cm3/

1000s.: 59.50...60.50

Shutoff

electromagnet Volt: 24 Dispersion cm3/: 5.0 1000s.: (6.0)

Low-idle speed regulation

1/min: 350 Speed

Del. quantity cm3/

1000s.: 11.00...15.00

Shutoff

electromagnet Volt: 24 Del. quantity cm3/: 5.5 1000s.: (7.0)

Full-load speed regulation

1/min: 1400 Speed

Charge press hPa: 1000

Del. quantity cm3/

1000s.: 42.00...48.00

Shutoff

electromagnet Volt: 24

Start:

1/min: 100 Supply-pump Del. quantity cm3/: 100.00...160.00 mind 1000s.: 100.0 pressure bar: 3.90...4.50 Shutoff Shutoff electromagnet Volt: 24 electromagnet Volt: 24 Overlow quantity at overflow valve: Inspection-pump test specifications Test specifications in parentheses 1/min: 500 1st speed Charge press. hPa: -Timing-device characteristic: Shutoff electromagnet Volt: 24 : 41.70...83.40 quantity cm3/10s: (26.70...98.40) 2nd speed 1/min: 1250 Charge press. hPa: 1000 Shutoff 2nd speed 1/min: 1250 hPa: 1000 Charge press TD travel mm: 2.10...2.90 mm: (1.80...3.20)Shutoff electromagnet Volt: 24 3rd speed 1/min: 1000 Charge press hPa: 1000 electromagnet Volt: 24 : 55.60...139.00 Overflow cm3/10s: (40.60...154.00) quantity TD travel mm: 1.50...1.90 mm: (1.00...2.40) Delivery-quant. and breakaway char.: Shutoff electromagnet Volt: 24 7.Rotacao 1/min: 850 1nd speed 1/min: 600 Charge press. hPa: 1000 Charge-air pressure-setting mm: 0.50...1.30 mm: (0.20...1.60) TD travel point hPa: 450 LDA-stroke mm: 4.0 Shutoff Shutoff electromagnet Volt: 24 electromagnet Volt: 24 1/min: 450 Del. quantity cm3/: 68.00...69.00 1000s.: (64.50...72.50) 2nd speed 1/min: 1490 8th speed Charge press. hPa: mm: 2.00...3.00 TD travel Charge press. hPa: 1000 Shutoff mm: (1.80...3.20) KSB/AFB Volt: 24 valve electromagnet Volt: 24 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Shutoff electromagnet Volt: 24 1/min: 1445 3rd speed Supply-pump pressure characteristic: Charge press. hPa: 1000 Shutoff electromagnet Volt: 24
Del. quantity cm3/: 15.00...45.00
1000s.: (15.00...45.00)
5th speed 1/min: 1400 1st speed 1/min: 850 Charge press. hPa: 1000 Supply-pump bar: 5.70...6.30 pressure Shutoff Charge press. hPa: 1000 electromagnet Volt: 24 Shutoff 1/min: 1000 2nd speed electromagnet Volt: 24 Del. quantity cm3/: 42.00...48.00 Charge press. hPa: 1000 Supply-pump 1000s.: (39.00...51.00) bar: 6.30...6.90 pressure 9th speed 1/min: 1250 Shutoff Charge press. hPa: 1000 Shutoff electromagnet Volt: 24 Shutott electromagnet Volt: 24 Del. quantity cm3/: 73.00...77.00 1000s.: (72.00...78.00) 3rd speed 1/min: 1250 Charge press. hPa: 1000 Supply-pump bar: 7.20...7.80 pressure 1/min: 1100 10th speed Charge press. hPa: 1000 Shutoff electromagnet Volt: 24 4th speed 1/min: 500 Shutoff electromagnet Volt: 24 Charge press. hPa: 1000

Del. quantity cm3/: 72.50...75.50 1000s.: (70.50...77.50) Del. quantity cm3/: 55.00...85.00 1000s.: (55.00...85.00) 12th speed 1/min: 850 Charge press. hPa: 1000 1/min: 100 4th speed Shutoff Shutoff electromagnet Volt: 24 electromagnet Volt: 24 Del. quyntity cm3/: 71.50...72.50 Del. quantity cm3/: 100.00...160.00 1000s.: (69.00...75.00) 1000s.: (100.00...160.00) 1/min: 500 18th speed Charge press. hPa: -Shutoff Shutoff electromagnet: electromagnet Volt: 24 Cut-in Del. quantity cm3/: 59.50...60.50 min voltage : 20.0 1000s.: (56.00...64.00) : 24.0 Rated voltage Mech. shutoff: Mounting and assembly dimensions: Mech. Abstelluna: Designation 1st speed 1/min: 1250 Charge press. hPa: 1000 mm: 3.6...3.8 Κ KF mm: KOT Del. quantity cm3/: 0.00...3.00 MS mm: ~ 1000s.: (0.00...3.00) mm: 3.7 SVS max. Shutoff LDA stroke mm: 4.0 electromagnet volt: 24 mm: 34.8...38.8 Ya mm: 44.9...50.1 Yb Electr. shutoff: Remarks: 1st speed 1/min: 350 : CDC # 328 1848 Charge press. hPa: -Del. quantity cm3/: 0.00...3.00 1000s.; (0.00...3.00) Shutoff electromagnet volt: -Idle delivery: 1/min: 350 1st speed Shutoff electromagnet Volt: 24 Del. quantity cm3/: 11.00...15.00 1000s.: (8.00...18.00) cm3/; 5.5 Dispersion 1000s.: (7.0) 1/min: 400 2nd speed Shutoff electromagnet Volt: 24 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Automatic starting fuel delivery: 1st speed 1/min: 130 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 105.00...165.00 1000s.: (105.00...165.00) 2nd speed 1/min: 200 Shutoff electromagnet Volt: 24

Note inst. in remarks column

Test scheet : CDC

: 29.06.93 Edition

replaces

Calibrating oil : ISO-4113

Injection pump : VE6/12F1250R373-7

Type number : 0 460 426 216

Customer Part-No. :

Customer-specific information

Customer : CDC

Engine : 6 BTA-590

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil °C return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

assembly : 1 688 901 027

Openina

bar: 250.00...253.00 Pressure

Perforated-plate

mm: 0.5 diameter

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00

x Wall thickness : 2.00

x Length mm: 840

Start of delivery

Prestroke mm: 0.3

(from BDC): +-0.02(0.04)

Start of delivery block

Piston stroke mm: 1.85

mm: +-0.02(0.06)

Outlet

Injection-pump setting values

Test specifications in parentheses

Timing-device travel

1/min: 750 Speed Charge press. hPa: 1000

Setting value mm: 1.30...1.70

Supply-pump pressure

Speed 1/min: 750 Charge press hPa: 1000

Setting value bar: 3.20...3.80

Full-load del. with charge press.:

1/min: 750 Charge press. hPa: 1000

Del. quantity cm3/

1000s.: 84.50...85.50

cm3/: 4.0Dispersion

1000s.: (4.5)

Full-load del. w/out charge press.:

1/min: 500 Speed

Del. quantity cm3/

1**000**s.: 68.50...69.50

Low-idle speed regulation

Speed 1/min: 375

Del. quantity cm3/

1000s.: 8.00...14.00

Del. quantity cm3/: 5.5

1000s.: (7.0)

Full-load speed regulation

1/min: 1300 Speed Charge press hPa: 1000 Del. quantity cm3/ 1000S:: 59.00...65.00

Start:

Speed 1/min: 100

Del. quantity cm3/: 60.00...120.00

1000s.: 60.00 mind

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1050

Charge press hPa: 1000

TD travel mm: 2.20...3.00 mm: (1.90...3.30) 1/min: 750

3rd speed

Charge press hPa: 1000 TD travel mm: 1.30...1.70

mm: (0.80...2.20)

GO2

4th speed 1/min: 600 Del. quantity cm3/: 80.00...83.00 1000s.: (78.00...85.00) hPa: 1000 mm: 0.40...1.20 Charge press TD travel 1/min: 750 12th speed mm: (0.10...1.50) Charge press. hPa: 1000 Del. quyntity cm3/: 84.50...85.50 Supply-pump pressure characteristic: 1000s.: (82.00...88.00) 18th speed 1/min: 500 1st speed 1/min: 500 Charge press. hPa: Del. quantity cm3/: 68.50...69.50 1000S.: (65.00...73.00) 20th speed 1/min: 500 Charge press. hPa: 1000 Del. quantity cm3/: 83.00...91.00 Charge press. hPa: 1000 Supply-pump bar: 2.20...2.80 1/min: 750 pressure 2nd speed Charge press. hPa: 1000 Supply-pump 1000s.: pressure bar: 3.20...3.80 3rd speed 1/min: 1050 Mech. shutoff: Charge press. hPa: 1000 Mech. Abstellung: Supply-pump bar: 4.50...5.10 1st speed pressure 1/min: 1250 Charge press. hPa: 1000 Del. quantity cm3/: 0.00...3.00 Overlow quantity at overflow valve: 1000s.: (0.00...3.00) 1st speed 1/min: 500 Overflow : 41.70...83.40 Idle delivery: quantity cm3/10s: (26.70...98.40) 1/min: 1250 2nd speed 1st speed 1/min: 375 Del. quantity cm3/: 8-14 Charge press. hPa: 1000 (6-16)1000s.: SCHRAUBE 12 MM cm3/: 5.5
1000s.: (7.0)
1/min: 500 Overflow : 55.60...139.00 cm3/10s: (40.60...154.00) quantity Dispersion Delivery-quant. and breakaway char.: 2nd speed Del. quantity cm3/: 0.00...4.00 1000s.: (0.00...4.00) 1nd speed 1/min: 700 5th speed 1/min: 125 Charge-air pressure-setting Del. quantity cm3/: 0.00...5.00 point hPa: 400 1000s.: SCHRAUBE 3.0 MM LDA-stroke mm: 5.0 Del. quantity cm3/: 77.50...78.50 Automatic starting fuel delivery: 1000s.: (74.00...82.00) 1/min: 1400 1/min: 250 2nd speed 1st speed Charge press. hPa: 1000 Del. quantity cm3/: 85.00...135.00 Del. quantity cm3/: 0.00...3.00 1000s.: (85.00...135.00) 1000s.: (0.00...3.00) Del. quantity cm3/: 0.00...15.00 2nd speed 1/min: 450 1000s.: (0.00...15.00) Del. quantity cm3/: 48.00...88.00 4th speed 1/min: 1330 1000s.: (48.00...88.00) Charge press. hPa: 1000
Del. quantity cm3/: 15.00...55.00
1000s.: (15.00...55.00)
5th speed 1/min: 1300 1/min: 100 4th speed Del. quantity cm3/: 60.00...120.00 1000s.: (60.00...120.00) Charge press. hPa: 1000 Del. quantity cm3/: 59.00...65.00 Mounting and assembly dimensions: 1000s.: (56.00...68.00) 1/min: 1250 9th speed Designation Charge press. hPa: 1000 mm: -Del. quantity cm3/: 76.50...79.50 KF mm: 5.2...5.6 1000s.: (75.00...81.00) 1/min: 1050 MS mm: 10th speed LDA stroke mm: 5.0 Charge press. hPa: 1000 Ya mm: 37.0...41.0 Yb mm: 43.7...48.9

Remarks:

: CDC # 392 4062

BOSCH-INJ.-PUMP TEST SPECIFICATIONS Note inst. in remarks column Test scheet : CDC : FD 361 : 29.06.93 Copi. date: Edition replaces Calibrating oil : ISO-4113 Injection pump : VE6/12F110OR512 Type number : 0 460 426 217 Customer Part-No. : Customer Part-No. : Customer-specific information Customer : CASE Engine : 6 T 590 TEST BENCH REQUIREMENTS Overflow restricti: 1 463 456 303 Calibrating-oil return temp. with thermometer : 40.00...48.00 Electronically : 42.00...50.00 Inlet press., bar : 0.30...0.40 Calibrating nozzle-holder assembly : 1 688 901 027 Openina bar: 250.00...253.00 Pressure Perforated-plate mm: 0.5diameter Test inj. tubing : 1 680 750 017 Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 840 Start of delivery Prestroke mm: 0.2 (from BDC): +0.02(0.04)Start of delivery block

1/min: 900 Charge press. hPa: 1000 Setting value mm: 2.40...2.80 electromagnet Volt: 12 Supply-pump pressure 1/min: 900 Speed Charge press hPa: 1000 Setting value bar: 5.70...6.30 Shutoff electromagnet Volt: 12 Full-load del. with charge press.: 1/min: 700 Speed Charge press. hPa: 1000 Del. quantity cm3/ 1000s.: 76.50...77.50 Shutoff electromagnet Volt: 12 Dispersion cm3/: 4.01000s.: (4.5) Full-load del. w/out charge press.: Speed 1/min: 500 Del. quantity cm3/ 1000s.: 49.00...50.00 Shutoff electromagnet Volt: 12 Low-idle speed regulation Speed 1/min: 400 Del. quantity cm3/ 1000s.: 6.00...12.00 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 5.5 1000s.: (7.0) Full-load speed regulation Speed 1/min: 1180 Charge press hPa: 1000 Del. quantity cm3/ 1000S.: 38.00...42.00 Shutoff electromagnet Volt: 12 Start: Speed 1/min: 100 Del. quantity cm3/: 50.00...80.00 1000s.: 50.00 mind

Timing-device travel

Speed

Outlet.

Piston stroke mm: 1.5

Injection—pump setting values Test specifications in parentheses

mm: +-0.02(0.06)

: D

Shutoff electromagnet Volt:	12	†	Overflow : quantity cm3/10s:	55.60139.00 (40.60154.00)
Inspection pump tes Test specifications		† † †	Delivery-quant. and	breakaway char.:
Timing device chara	cteristic:	‡	1nd speed 1/min:	
2nd speed 1/min:	1100	†	Charge-air pressure point hPa:	-setting
	1000	Ţ.		5.9
	3.704.50	-	Shutoff	3.7
mn:	(3.404.80)	+	electromagnet Volt:	
Shutoff		+	Del. quantity cm3/:	68.0069.00
electromagnet Volt: 3rd speed 1/min:		†		(64.5072.50)
	1000	†	2nd speed 1/min: Charge press. hPa:	
TD travel mm:		I	Shutoff	1000
	(1.903.30)	1	electromagnet Volt:	12
Shutoff	-	+	Del. quantity cm3/:	
electromagnet Volt:		╁	1000s.:	(0.003.00)
4th speed 1/min:		+	3rd speed 1/min:	
	1000 -	t	Charge press. hPa:	1000
	0.801.60 (0.501.90)	†	Shutoff	12
Shutoff	(0.30(.90)	Ţ	electromagnet Volt: Del. quantity cm3/:	12 15 00 75 00
electromagnet Volt:	12	Ι	2000 - 1000 -	(15.0035.00)
		 	4th speed 1/min:	
Supply-pump pressure	e characteristic:	-	Charge press. hPa:	
		+	Shutoff	
1st speed 1/min:		+	electromagnet Volt:	12
Charge press. hPa:	1000 -	†	Del. quantity cm3/:	5.0035.00
Supply-pump pressure bar:	3.804.40	†	5th speed 1/min:	
Shutoff	3.004.40	Ι	Charge press. hPa:	
electromagnet Volt:	12		Shutoff	1000
2nd speed 1/min:		1	electromagnet Volt:	12
Charge press. hPa:	1000 -	-	Del. quantity cm3/:	38.0042.00
Supply-pump		+	1000s.:	(34.0046.00)
	5.706.30	t	9th speed 1/min:	
Shutoff	- 12	<u> </u>	Charge press. hPa:	1000
electromagnet Volt: 3rd speed 1/min:		1	Shutoff	10
Charge press. hPa:			<pre>electromagnet Volt: Del. quantity cm3/:</pre>	
Supply-pump	,333			(64.5070.50)
	6.507.10	-	12th speed 1/min:	700
Shutoff	-	+	Charge press. hPa:	
electromagnet Volt:	12 -	+	Shutoff	
	-	+	electromagnet Volt:	
Overlow quantity at	overflow valve:	†	Del. quyntity cm3/:	
1st speed 1/min:	500	t		(74.0080.00)
Charge press. hPa:		Ī	18th speed 1/min: Charge press. hPa:	
Shutoff	-		Shutoff	
electromagnet Volt:	12	L	electromagnet Volt:	12
Overflow :	41.7083.40	+	Del. quantity cm3/:	49.0050.00
quantity cm3/10s:	(26.7098.40)	+	1000s.:	(46.0053.00)
2nd speed 1/min:		+	20th speed 1/min:	500
Charge press. hPa:	1000 -	t	Charge press. hPa:	1000
Shutoff	40	†	Shutoff	40
electromagnet Volt:	12	t	electromagnet Volt:	16

Del. quantity cm3/: 72.00...78.00 1000s.: (70.00...80.00) SVS max. mm: 6.0 LDA stroke mm: 5.9 mm: 34.8...38.8 Ya Mech. shutoff: mm: 35.9...41.1 Yb Electr. shutoff: Remarks: : CDC # 392 4983 1st speed 1/min: 400 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Shutoff electromagnet volt: -Idle delivery: 1/min: 400 1st speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 6.00...12.00 1000s.: (4.00...14.00) cm3/: 5.5 1000s.: (7.0) 1/min: 375 Dispersion 5th speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 11.00...19.00 1000s.: (9.00...21.00) Automatic starting fuel delivery: 1/min: 180 1st speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 70.00...100.00 1000s.: (70.00...100.00) 2nd speed 1/min: 350 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 65.00...85.00 1000s.: (65.00...85.00) 1/min: 100 4th speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 50.00...80.00 1000s.: (50.00...80.00) Shutoff electromagnet: Cut-in min voltage : 10.0 : 12.0 Rated voltage Mounting and assembly dimensions: Designation K mm: -KF mm: 5.2...5.6

MS

G07

mm: 1.0...1.4

Note remarks

Test sheet

: MAN

Edition

: 23.07.93

Replaces

Test oil

: ISO-4113

Combination no. : 0 400 849 203

Injection pump

Pump designation : PE10A95D520/5L82501

EP type number

: 0 410 699 997

Governor

Governor design. : RQ900AB985R

Governer no.

: 0 420 201 618

Customer-spec. information Customer

: MAN

Engine

: D2530MTE

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 0 681 343 009

Opening

pressure, bar

: 172...175

Test lines

: 1 680 750 008

Outside diameter

x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 1.70...1.80 : (1.65...1.85)

Rack travel in mm : 9.00...12.00

Firing order

: 10- 9- 4- 1- 8- 7-

6-3-5-2

Phasing

: 0-45-72-117-144-189-

216-261-288-333

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no.

BASIC SETTING

1st speed

Spread

rpm: 850

: 10

Rack travel in mm : 10.70...10.80

Del.quantity cm3/: 10.2...10.4

100 s: (10.0...10.6)

cm3 : 0.3

100 s: (0.6)

2nd speed rpm : ? Rack travel in mm : ?

Del.quantity cm3/:?

100 s: (?)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 850

Del.quantity

: 102.5...104.5 1000 : (100.5...106.5)

Spread cm3

: 3.00

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 29...37

Testing:

1st rack travel in: 10.40 Speed

rpm : 895...950

2nd rack travel in: 4.50

rpm : 930...940 Speed

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.40

rpm : 895...905 Speed

HIGH IDLE

1st version

Speed rpm : 936 Rack travel in mm : 4.50...4.80

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.20...5.40
Del.quantity cm3/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7779

APPLICATION

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : CUM Edition : 02.07.93 Replaces Test oil : ISO-4113 Combination no. : 0 400 866 195 Injection pump Pump designation : PES6A100D320/3RS2763 EP type number : 0 410 806 006 Governor Governor design. : RSV375...1000A0c2190 -70R : 0 420 233 309 Governer no. Customer-spec information Customer : C.D.C. Engine : 6 CTA 1st version kW : 166.0 Rated speed : 2000 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder assembly : 1 688 901 101 Openina pressure, bar : 207...210 Orifice plate diameter mm : 0,6 Test lines : 1 680 750 014 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

: 2.80...2.90 Prestroke mm : (2.75...2.95) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm : 1000 Rack travel in mm : 12.90...13.00 Del.quantity cm3/: 13.3...13.5 100 s: (13.1...13.7) cm3 : 0.4 Spread 100 s: (0.6) rpm : 375.0 2nd speed Rack travel in mm : 5.3...5.5 Del.quantity cm3/ : 1.7...2.1 100 s: (1.4...2.3) cm3 : 0.6Spread 100 s: (0.8) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Speed Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x : ?FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1000 : 133.5...135.5 Del quantity 1000 : (131.5...137.5) Spread cm3 : 4.00 1000 : (6.50) RATED SPEED 1st version Control Lever position degrees: 37...45

Testing:

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

1st rack travel in: 11.90 Speed rpm : 1050...1060 2nd rack travel in: 4.00

Speed rpm: 1125...1135 3rd rack travel in: 4.00

Speed rpm : 1120...1150

4th rack travel in: 1200

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 15...23

Setting point w/out bumper spring

Speed rpm : 375 Rack travel in mm: 4.9

Testina:

Speed rpm : 100

Minimum rack trave: 19.00 Speed rpm : 375

Rack travel in mm : 5.30...5.50

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000

Rack travel in m: 12.90...13.00 2nd speed rpm : 750

Rack travel in m: 13.60...13.80

STATE OF STA FUEL DELIVERY CHARACTERISTICS

1st version

rom : 750 Speed

Del.quantity cm3/: 146.0...150.0

1000 s: (144.0...152.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.90

Speed rpm : 1050...1060

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 145.0...165.0 1000 s: (140.0...170.0) Rack travel in mm: 20.00...21.00

LOW IDLE

Speed rpm : 375

Rack travel in mm : 5.30...5.50

Del.quantity cm3/: 17.0...21.0

1000 s: (14.5...23.5)

Spread

cm3 : 6.00

1000 s: (8.00)

Remarks:

: C.D.C. # 3921117

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark at 10° cam rotation angle after start of delivery, cylinder 1

G11

Note remarks

Test sheet

: CUM

Edition

: 15.06.93

Replaces

Test oil

: ISO-4113

Combination no.

: 0 400 866 215

Injection pump

Pump designation : PES6A100D320/3RS2691

EP type number

: 9 410 230 025

Governor

Governor design. : RSV400...1050A0c2190

-85R

Governer no.

: 0 420 233 324

Customer-spec. information Customer

: C.D.C

Engine

: 6 CT 8.3

1st version kW

: 154.4

Rated speed

: 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 1 688 901 101

Opening

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,6

Test Lines

: 1 680 750 014

Outside diameter

x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm

: 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order

: 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 1050

Rack travel in mm: 12.40...12.50

Del.quantity cm3/: 12.5...12.7

100 s: (12.3...12.9)

Spread

cm3 : 0.4

100 s: (0.6)

2nd speed

rpm : 400.0

Rack travel in mm : 5.8...6.0 Del.quantity cm3/ : 1.5...1.9

100 s: (1.3...2.2)

Spread

cm3 : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Speed Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1050

Del.quantity

: 125.5...127.5

1000 : (123.5...129.5)

Spread

cm3

: 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 38...46

Testing:

1st rack travel in: 11.40 Speed rpm : 1090...1100 2nd rack travel in: 4.00 Speed rpm : 1140...1150 3rd rack travel in: 4.00 Speed rpm : 1135...1165 4th rack travel in: 1275 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 19...27 Setting point w/out bumper spring COM : 400 Rack travel in mm : 5.4 Testing: Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm : 400 Rack travel in mm: 5.80...6.00 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.40 Speed rpm : 1090...1100 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 145.0...165.0 1000 s: (140.0...170.0) Rack travel in mm : 19.00...21.00 LOW IDLE Speed τpm : 400 Rack travel in mm : 5.80...6.00 Del.quantity cm3/ : 15.5...19.5 1000 s: (13.0...22.0) Spread cm3 : 6.00 1000 s: (8.00) Remarks: : C.D.C. # 3921141 Limit shutoff stop screw to 1.0 mm. Start-of-delivery mark at 10° cam rotation angle after start of delivery, cylinder 1

Note remarks

Test sheet

: CUM

Edition

: 15.06.93

Replaces

Test oil

: ISO-4113

Combination no.

: 0 400 866 216

Injection pump

Pump designation: PES6A1000320/3RS2691

EP type number

: 9 410 230 025

Governor

Governor design.

: RSV400...1050A0c2216

-8R

Governer no.

: 0 420 233 333

Customer

Customer-spec. information : C.D.C.

Engine

: 6 CT 8.3 ltr

1st version kW

: 131.0

Rated speed

: 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 1 688 901 017

Opening

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,6

Test lines

: 1 680 750 014

Outside diameter

x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm

: 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order

: 1-5-3-6-2-4

Phasina

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm : 1050

Rack travel in mm : 11.30...11.40

Del.quantity cm3/: 10.6...10.8

100 s: (10.4...11.0)

Spread

Spread

cm3 : 0.4

100 s: (0.6)

2nd speed

rpm : 400.0

Rack travel in mm: 5.5...5.7 Del.quantity cm3/: 1.4...1.8

100 s: (1.1...2.0)

cm3 : 0.6

100 s: (0.3)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Spread

rpm : 1050

Del.quantity

: 106.0...108.0

1000 : (104.0...110.0)

cm3

: 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 44...52

Testing:

G14

1st rack travel in: 10.30

Speed rpm : 1090...1100

2nd rack travel in: 4.00

rpm : 1150...1160 Speed

3rd rack travel in: 4.00

rpm : 1140...1170 Speed

4th rack travel in: 1250

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 24...32

Setting point w/out bumper spring

riom : 400 Rack travel in mm: 5.1

Testina:

Speed : 100 rpm

Minimum rack trave: 19.00 Speed rpm : 400

Rack travel in mm : 5.50...5.70

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 11.30...11.40

2nd speed : 750 rpm

Rack travel in m: 12.30...12.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750 Del.quantity cm3/ : 120.0...124.0

1000 s: (118.0...126.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.30

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

rpm : 400 Speed

Rack travel in mm: 5.50...5.70 Del.quantity cm3/: 14.0...18.0 1000 s: (11.5...20.5)

Spread

cm3 : 6.00

1000 s: (8.00)

Remarks:

: C.D.C. # 3921106

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

Note remarks

Test sheet : DEE

Edition : 21.04.93 Replaces : 02.93

Test oil : ISO-4113

Combination no. : 0 400 876 381

Injection pump

Pump designation : PES6A100D410RS2762-1

EP type number : 0 410 806 008

Governor

Governor design. : RSV425...1050A0C2252

-1L

: 0 420 232 571 Governer no.

Customer-spec. information Customer : JOHN DEFRE

Engine : 6076TRW-30

: 131.5 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 01C

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05 : (2.90...3.10)

Rack travel in mm : 10.50...10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 11.30...11.40

Del.quantity cm3/: 10.9...11.1

100 s: (10.5...11.1)

Spread cm3 : 0.4

100 s: (0.6)

rpm : 425.0 2nd speed Rack travel in mm: 5.5...5.7 Del.quantity cm3/: 2.1...2.5

100 s: (1.9...2.7)

cm3 : 0.6Spread

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Spread

Speed rpm : 1050

: 109.0...111.0 Del.quantity 1000 : (105.0...111.0)

cm3 : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 42...50

Testing:

1st rack travel in: 10.30

Speed rpm : 1095...1105

2nd rack travel in: 4.00

rpm : 1165...1175 Speed

3rd rack travel in: 4.00

Speed rpm : 1155...1185 4th rack travel in: 1300

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 20...28

Setting point w/out bumper spring

rpm : 425° Speed Rack travel in mm: 5.1

Testing:

Speed : 100 rpm Minimum rack trave: 19.00 Speed rpm : 425

Rack travel in mm : 5.50...5.70

TORQUE CONTRO!

Torque control curve - 1st version

1st speed rpm : 1050 Rack travel in m: 11.30...11.40

rpm : 750 2nd speed

Rack travel in m: 13.10...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750 Del.quantity cm3/ : 134.5...138.5 1000 s: (132.5...140.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.30

Speed

rpm : 1095...1105

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 100.0...120.0 1000 s: (95.0...125.0)

LOW IDLE

rpm : 425 Speed

Rack travel in mm: 5.50...5.70 Del.quantity cm3/: 21.5...25.5 1000 s: (19.5...27.5)

Spread cm3 : 6.00

1000 s: (8.00)

Remarks:

: JOHN DEERE # RE41833

Start-of-delivery mark = 13,5° after

start of delivery cyl. 1.

Adiustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in

full-load delivery with torque-control

spring retainer.

APPLICATION

Tractor (tractor engines)

Note remarks

Test sheet

: DEE

Edition

: 21.04.93

Replaces

: 02.93

Test oil

: ISO-4113

Combination no. : 0 400 876 411

Injection pump

Pump designation : PES6A100D410RS2762-1

EP type number

: 0 410 806 008

Governor

Governor design.

: RSV425...1100A0c2252

-2L

Governer no.

: 0 420 232 591

Customer-spec. information Customer

: JOHN DEERE

Engine

: 6075ADW-30

1st version kW

: 135.0

Rated speed

: 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 1 688 901 101

Openina

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,6

Test lines

: 1 680 750 008

Outside diameter

x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm

: 2.95...3.05

: (2.90...3.10)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 1100

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 10.4...10.6

100 s: (10.2...10.8)

cm3 : 0.4

100 s: (0.6)

2nd speed

Spread

rpm : 425.0

Rack travel in mm: 6.0...6.2

Del.quantity cm3/ : 3.1...3.5

100 s: (2.9...3.7) cm3 : 0.6

Spread

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1100

Del.quantity

: 104.5...106.5 1000 : (102.5...108.5)

Spread

cm3 : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 45...53

Testing:

G18

1st rack travel in: 10.10

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

rpm : 1205...1215 Speed

3rd rack travel in: 4.00

rpm : 1195...1225 Speed

4th rack travel in: 1350

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 19...27

Setting point w/out bumper spring

rpm : 425 Rack travel in mm: 5.6

Testing:

rpm : 100 Speed

Minimum rack trave: 19.00

rpm : 425

Rack travel in mm : 6.00...6.20

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1100 1st speed

Rack travel in m: 11.10...11.20

2nd speed rpm : 700

Rack travel in m: 13.50...13.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700

Del.quantity cm3/: 141.0...145.0 1000 s: (139.0...147.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 100.0...120.0

1009 s: (95.0...125.0)

LOW IDLE

Speed rpm : 425

Rack travel in mm : 6.00...6.20 Del.quantity cm3/: 31.0...35.0

1000 s: (29.0...37.0)

cm3 : 6.00Spread

1000 s: (8.00)

Remarks:

: JOHN DEERE # RE55529

Start-of-delivery mark = 13.5° after

start of delivery cyl. 1.

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in

full-load delivery with torque-control

spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : DEE : 02.07.93 Edition : 02.93 Replaces Test oil : ISO-4113 Combination no. : 0 400 876 416 Injection pump Pump designation : PES6A100D410RS2762-1 EP type number : 0 410 806 008 Governor Governor design. : RSV400...1100A2C2229 -1L : 0 420 232 594 Governer no. Customer-spec. information Customer : JOHN DEERE : 6076 TF 030 Engine 1st version kW : 142.0 Rated speed : 2200 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 457 413 010 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 101 assembly Opening pressure, bar : 207...210 Orifice plate diameter mm : 0,6 Test lines : 1 680 750 008 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600 (A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05 : (2.90...3.10) Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order Phasing : 0-60-120-180-240-300 Tolerance $+ - \circ : 0.50 (0.75)$ Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 1100 Rack travel in mm : 12.00...12.10 Del.quantity cm3/: 12.0...12.2 100 s: (11.8...12.4) Spread cm3 : 0.4100 s: (0.6) rpm : 400.02nd speed Rack travel in mm : 5.2...5.4 Del.quantity cm3/ : 1.9...2.3 100 s: (1.6...2.5) Spread cm3 : 0.6 100 s: (0.8) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Speed Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x : ? FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1100 : 120.0...122.0 Del.quantity 1000 : (118.0...124.0) : 4.00 Spread cm3 1000 : (6.50) RATED SPEED 1st version Control lever position degrees: 43...51

Testing:

1st rack travel in: 11.00

Speed rpm : 1145...1155

2nd rack travel in: 4.00

Speed rpm : 1205...1215

3rd rack travel in: 4.00

Speed rpm : 1195...1225 4th rack travel in: 1300

Speed rom : 0.30...1.40

LOW IDLE 1

Control Lever

position degrees: 18...26 Setting point w/out bumper spring

Speed rpm : 400

Rack travel in mm: 4.8

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm : 400

Rack travel in mm : 5.20...5.40

Rack travel in mm : 2.00

rpm : 550...610 Speed

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1100 1st speed

Rack travel in m: 12.00...12.10

rpm : 700 2nd speed

Rack travel in m: 13.90...14.10

FUEL DELIVERY CHARACTERISTICS

1st version

: 700 Speed rom

Del.quantity cm3/: 151.0...154.0

1000 s: (148.5...156.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00

Speed rpm : 1145...1155

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 100.0...120.0

1000 s: (95.0...125.0)

LOW IDLE

: 400 Speed rom

Rack travel in mm : 5.20...5.40

Del.quantity cm3/: 19.0...23.0

1000 s: (16.5...25.5)

cm3 : 6.00Spread

1000 s: (8.00)

Remarks:

: JOHN DEERE # RE48640

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control

spring retainer.

Start-of-delivery mark = 13,5° after

start of delivery cyl. 1.

Note remarks

Test sheet

: DEE

Edition

: 15.06.93

Replaces

: 03.93

Test oil

: ISO-4113

Combination no.

: 0 400 876 417

Injection pump

Pump designation : PES6A100D410RS2762-1

EP type number

: 0 410 806 008

Governor

Governor design.

: RSV425...1100A0c2252

-41

Governer no.

: 0 420 232 595

Customer-spec. information Customer

: JOHN DEERE

Engine

: 6076ARW-32

1st version kW

Rated speed

: 145.0 : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 1 688 901 101

Openina

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,6

Test Lines

: 1 680 750 008

Outside diameter

x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm

: 2.95...3.05 : (2.90...3.10)

Rack travel in mm : 9.00...12.00

Firing order

: 1-5-3-6-2-4

Phasina

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 1100

Rack travel in mm : 11.90...12.00

Del.quantity cm3/: 11.4...11.6

100 s: (11.2...11.8)

Spread

cm3 : 0.4

100 s: (0.6)

2nd speed

rpm : 425.0

Rack travel in mm : 5.7...5.9 Del.quantity cm3/ : 2.6...3.0

100 s: (2.3...3.2)

Spread

cm3 : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1100

Del.quantity

: 114.0...116.0

1000

: (112.0...118.0)

Spread

cm3 : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 43...51

Testing:

1st rack travel in: 10.90

rpm : 1145...1155 Speed

2nd rack travel in: 4.00

Speed rpm : 1205...1215

3rd rack travel in: 4.00

rpm : 1195...1225 Speed

4th rack travel in: 1300

rpm : 0.30...1.40 Speed

LOW IDLE 1

Control Lever

position degrees: 20...28 Setting point w/out bumper spring

Speed rpm : 425 Rack travel in mm: 5.3

Testing:

Speed rpm : 100

Minimum rack trave: 19.00 Speed : 425 rpm

Rack travel in mm : 5.70...5.90

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 11.90...12.00

rpm : 750 2nd speed

Rack travel in m: 13.90...14.10

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750 Del.quantity cm3/ : 143.5...147.5

1000 s: (141.5...149.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.90

Speed

rpm : 1145...1155

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 100.0...120.0 1000 s: (95.0...125.0)

LOW IDLE

: 425 Speed rpm

Rack travel in mm : 5.70...5.90

Del.quantity cm3/: 26.0...30.0

1000 s: (23.5...32.5)

Spread cm3 : 6.001000 s: (8.00)

Remarks:

: JOHN DEERE # RE55711

Start-of-delivery mark = 13,5° after

start of delivery cyl. 1.

Adjustment without torque-control spring retainer with 0.5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Note remarks

Test sheet

: VOL

Edition

: 20.12.91

Replaces

Test oil

: ISO-4113

Combination no.

: 0 401 846 505E

Injection pump

Pump designation : PE6P110A320RS483

EP type number

: 0 411 816 159

Governor

Governor design. : RQV250...1100PA918E

Governer no.

: 0 421 813 772

Customer-spec. information

Customer

: VOLVO-TRUCK

Engine

: TD71

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 0 681 343 009

Openina

pressure, bar

: 172...175

Test lines

: 1 680 750 015

Outside diameter

x Wall thickness

x Length mm

: 6.00x1.50x600

(A) Injection pump setting values insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 3.00...3.10

: (2.95...3.15)

Rack travel in mm : 9.00...12.00 Firing order

: 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 700

Rack travel in mm : 11.20...11.30

Del.quantity cm3/: 10.1...10.3

100 s: (9.8...10.6)

Spread

cm3 : 0.4

100 s: (0.7)

2nd speed

rpm : 250.0

Rack travel in mm: 5.3...5.5

Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.3)

Spread

cm3 : 0.3

100 s: (0.6)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.10...1.30

2nd speed rpm : 380

: 2.30...2.60 travel mm

3rd speed rpm : 500

: 2.90...3.30 travel mm

4th speed

rpm : 1260

: 7.70...7.90 travel mm

5th speed

rpm : 1400

travel mm : 9.00...9.30

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1330

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed

rpm : 700

Aneroid pressure h: 900

Del.quantity : 101.0...103.0

1000 : (98.0...106.0)

cm3 : 4.00

1000 : (7.50)

RATED SPEED

Spread

1st version Control lever

position degrees: 104...112

Testing:

1st rack travel in: 10.20

Speed rpm : 1160...1170

2nd rack travel in: 4.00

speed rnm : 1260...1290

LOW IDLE 1 Control lever

position degrees: 56...64

Testing:

Speed : 100 rpm Minimum rack trave: 6.80 rpm : 250

Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

rpm : 250...450 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rpm Pressure hPa : 900

: 11.20...11.30 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 8.70...8.90

2nd pressure hPa : 560

Rack travel in m: 11.00...11.10

3rd pressure hPa : 290

Rack travel in m: 9.10...9.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 700 Speed

Del.quantity cm3/: 68.0...70.0

1000 s: (65.0.,.73.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.20

rpm : 1160...1170 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 170.0...200.0

1000 s: (166.0...204.0) Rack travel in mm: 20.00...21.00

LOW IDLE

rpm : 250

Rack travel in mm : 5.30...5.50

Del.quantity cm3/: 16.0...20.0 1000 s: (13.0...23.0) Spread cm3 : 3.00

1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90

Note remarks

Test sheet : DAF 11,7 m Edition : 23.10.92 Replaces : 02.92

Replaces : U2.92 Test oil : ISO-4113

Combination no. : 0 401 846 566

Injection pump

Pump designation : PE6P110A320RS526 EP type number : 0 411 816 178

Governor

Governor design. : RQ275/1000PA818-3

Governer no. : 0 421 801 534

Customer—spec. information Customer : DAF

Engine : LT 160 G

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening |

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 14.00...15.00

Firing order : 1-5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10 & maximum rack tra: 13.0...14.0 Difference ° CS : 2.00...4.00

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.20...14.30

Del.quantity cm3/: 15.6...15.8

100 s: (15.3...16.0)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 8.0...8.2 Del.quantity cm3/ : 2.5...3.0

100 s: (2.3...3.3)

Spread cm3 : 0.4 100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

Speed rpm: 600

Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 600 Aneroid pressure h: 1000

Del.quantity : 156.0...158.0

1000 : (153.5...160.5)

Spread cm3 : 4.00 1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 600 Rack travel in mm : 15.8

Testing:

1st rack travel in: 12.50

Speed rpm : 1030...1045

2nd rack travel in: 4.00

Speed rpm : 1100...1130 4th rack travel in: 1300

rpm : 0.00...1.40Speed

LOW IDLE 1

Setting point w/out bumper spring

rpm : 300 Rack travel in mm: 8.1

Testing:

: 200 Speed man Minimum rack trave: 10.70 Speed rom : 300

Rack travel in mm : 8.00...8.20

Rack travel in mm: 3.00

rpm : 370...410 Speed

TORQUE CONTROL

Dimension a mm : 0.40

Torque control curve - 1st version

1st speed rpm : 980

Rack travel in m: 13.40...13.60

2nd speed rpm : 600

Rack travel in m: 14.40...14.60

3rd speed rpm : 750

Rack travel in m: 13.90...14.10

4th speed rpm : 825

Rack travel in m: 13.60...13.80

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 600 rpm

hPa : 1000 Pressure

: 14,20...14.30 Rack travel mm

Measurement

Speed $1/\min: 600$

1st pressure hPa : -

Rack travel in m: 12.70...12.90 2nd pressure hPa : 290

Rack travel in m: 13.80...13.90

3rd pressure hPa : 260

Rack travel in m: 13.20...13.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000 rpm : 980

Del.quantity cm3/: 136.0...138.0

1000 s: (132.0...142.0)

Aneroid pressure h: -

rpm : 600 Speed

Del.guantity cm3/: 122.0...124.0 1000 s: (119.5...126.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.50

rpm : 1030...1045 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 280.0...320.0

1000 s: (276.0...324.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

rpm : 300 Speed

Rack travel in mm : 8.00...8.20

Del.quantity cm3/: 25.5...30.5

1000 s: (23.0...33.0)

Spread

cm3 : 4.501000 s: (7.50)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

: VOL 10,0 o6 Test sheet Edition : 05.02.93 Replaces : 08.91 Test oil : ISO-4113

Combination no. : 0 401 846 745

Injection pump

Pump designation : PE6P110A320RS3080 EP type number : 0 411 816 722

Governor

Governor design. : RQV250...1100PA919

: 0 421 813 776 Governer no.

Customer-spec. information Customer : VOLVO

: T0100GA Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

: 172...175 pressure, bar

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60

: (3.45...3.65) Rack travel in mm : 9.00,...12.00

: 1-5- 3- 6- 2-Firing order

Phasing : 0-60-120-180-240-300

Polerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 16.7...16.9

100 s: (16.4...17.2)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0Rack travel in mm: 3.9...4.1 Del.guantity cm3/: 1.5...1.9

100 s: (1.2...2.1)

Spread cm3 : 0.3100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.20...1.30

: 370 2nd speed rpm

travel mm : 2.60...3.00

3rd speed : 430 rpm

3.50...3.90 travel mm

: 1160 4th speed rpm

travel mm : 8.10...8.30

5th speed rpm : 1210

: 9.40...9.60 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

Speed rpm : 1180

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 900

Del.quantity : 167.0...169.0 1000 : (164.0...172.0)

: 4.00 Spread cm3

1000 : (7.50)

RATED SPEED

1st version Control Lever

position degrees: 115...123

Testina:

1st rack travel in: 11.30

Speed rpm : 1160...1170

2rd rack travel in: 4.00

rpm : 1220...1250 Speed

4th rack travel in: 1350 Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 60...68

Testina:

Speed rpm : 100

Minimum rack trave: 5.30 Speed rpm : 250 Rack travel in mm : 3.90...4.10

CONSTANT REGULATION

rpm : 270...380 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500 Pressure hPa : 900

: 12.30...12.40 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.80...10.00

2nd pressure hPa : 610

Rack travel in m: 12.10...12.20

3rd pressure hPa : 280

Rack travel in m: 10.10...10.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 700 Speed

Del.quantity cm3/: 121.0...124.0 1000 s: (118.5...126.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.30

rpm : 1160...1170 Speed

STARTING FUEL DELIVERY

Speed rion: 100

Del.quantity cm3/: 160.0...190.0 1000 s: (156.0...196.0) Rack travel in mm: 20.00...21.00

LOW IDLE

Speed rpm : 250

Rack travel in mm : 3.90...4.10 Del.quantity cm3/: 15.0...19.0 1000 s: (12.5...21.5) Spread cm3 : 3.00 1000 s: (6.00)

Remarks:

Dalivery-valve spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : DAF 8,3 p 9 Edition : 26.06.92 : 03.91 Replaces Test oil : ISO-4113 Combination no. : 0 401 846 905 Injection pump Pump designation : PE6P110A720RS3225Z EP type number : D 411 816 762 Governor Governor design. : RQ275/1200PA913-1 : 0 421 801 549 Governer no. Customer-spec. information : DAF Customer Engine : HT 168 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening : 172...175 pressure, bar Test Lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00x1.50x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ___ BEGINNING OF DELIVERY Test pressure, bar: 25...27 Prestroke mm : 3.70...3.80 : (3.65...3.85) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300 Tolerance + - * : 0.50 (0.75) BASIC SETTING 1st speed rpm: 1000Rack travel in mm : 12.30...12.40 Del.quantity cm3/: 12.0...12.2 100 s: (11.7...12.4) Spread cm3 : 0.4100 s: (0.7) 2nd speed rpm : 275.0 Rack travel in mm: 7.2...7.4 Del.quantity cm3/: 1.4...1.9 100 s: (1.1...2.1) cm3 : 0.4Spread 100 s: (0.7) GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 550 Speed Rack travel in mm: 15.20...16.40 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1000 Speed Aneroid pressure h: 1000 Del.quantity : 120.0...122.0 1000 : (117.5...124.5) : 4.00 Spread cm3 1000 : (7.50) RATED SPEED 1st version Setting point: Speed rom Rack travel in mm: 15.8 Testing: 1st rack travel in: 11.30 rpm : 1235...1250 Speed 2nd rack travel in: 4.00 rpm : 1320...1350 Speed 4th rack travel in: 1400 rpm : 0.00...1.40Speed LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 275 Rack travel in mm: 4.8 Testing: Speed rpm : 100 Minimum rack trave: 7.00 rpm : 275 Speed Rack travel in mm : 4.70...4.90 Rack travel in mm: 2.00 rpm : 340...380 Speed TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 13.30...13.50 2nd speed rpm : 1200 Rack travel in m: 13.10...13.40 Aneroid/Altitude Compensator Test 1st version Settina : 600 Speed rpm hPa : 1000 Pressure Rack travel mm : 12.30...12.40 Measurement 1/min : 600 Speed 1st pressure hPa : -Rack travel in m: 10.80...10.90 2nd pressure hPa : 400 Rack travel in m: 12.00...12.10 3rd pressure hPa : 320 Rack travel in m: 11.50...11.70 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: -Speed rpm : 600
Del.quantity cm3/ : 83.5...85.5 1000 s: (81.0...88.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.30 rpm : 1235...1250 Speed LOW IDLE

Rack travel in mm : 4.70...4.90
Remarks:

+ + + + + +

H03

Speed

rom

: 275

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB 11,0 x 2 : 05.03.93 Edition Replaces : 06.91 Test oil : ISO-4113 Combination no. : 0 401 846 946 Injection pump Pump designation : PE6P110A320LS3851-1 EP type number : 0 411 818 780 Governor Governor design. : RQ300/1050PA1007-1 : 0 421 801 589 Governer no. Customer-spec. information Customer : MERCEDES-BENZ Engine : OM441 1st version kW : 151.0 Rated speed : 2100 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Overflow quantity min. 1/h: 100...120 Test nozzle holder assembly : 1 688 901 101 Openina pressure, bar : 207...210

Orifice plate diameter mm : 0.6 Test Lines : 1 680 750 008 Outside diameter x Wall thickness x Length mm : 6.00X2.00X600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____

BEGINNING OF DELIVERY Test pressure, bar: 25...27 Prestroke mm : 4.40...4.50 : (4.35...4.55) Rack travel in mm : 9.00...12.00 Firing order : 6-3-5-2-4-1 Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 6 BASIC SETTING 1st speed rpm: 1050Rack travel in mm : 12.20...12.30 Del.quantity cm3/: 11.8...12.0 100 s: (11.5...12.2) Spread cm3 : 0.8100 s: (1.3) rpm : 300.02nd speed Rack travel in mm: 6.7...6.9 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.4) cm3 : 0.6 Spread 100 s: (1.1) GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm::650 Speed Rack travel in mm : 13.10...13.90 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1050 Speed Del.quantity : 118.0...120.0 1000 : (115.5...122.5) cm3 : 8.50 Spread 1000 : (13.00) RATED SPEED 1st version Setting point: Speed rom

Rack travel in mm: 13.5

Testina:

1st rack travel in: 11.20

Speed rpm : 1090...1100

2nd rack travel in: 4.00

rpm : 1170...1200 Speed

4th rack travel in: 1300

rpm : 0.00...2.00Speed

LOW IDLE 1

Setting point w/out bumper spring

rpm : 300 Rack travel in mm: 6.8

Testing:

Speed rpm : 200 Minimum rack trave: 8.40

Speed rpm : 300

Rack travel in mm : 6.70...6.90

Rack travel in mm : 2.00

rpm : 390...430 Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm3/ : 119.0...125.0
1000 s: (116.5...127.5)

Spread cm3 : 11.00

1000 s: (14.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20

Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 130.0...150.0 1000 s: (126.0...154.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks

Test sheet : 23.10.92 Edition Replaces : 09.92 Test oil : ISO-4113

Combination no. : 0 401 846 967

Injection pump

Pump designation : PE6P110A320LS3851-2

EP type number : D 411 816 785

Governor

Governor design. : RQV350...1050PA378

-12

Governer no. : 0 421 814 016

Customer-spec. information

Customer : MERCEDES-BENZ

: OM441 Engine

1st version kW : 151.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 101 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.40...4.50 Prestroke mm : (4.35...4.55)

Rack travel in mm : 9.00...12.00 Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 12.20...12.30

Del.quantity cm3/: 11.8...12.0

100 s: (11.5...12.2)

cm3 : 0.8Spread

100 s: (1.3)

2nd speed rpm : 350.0Rack travel in mm: 7.5...7.7 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.4)

cm3 : 0.6Spread 100 s: (1.1)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm:3501st speed

: 1.80...2.30 travel mm

rpm : 455 2nd speed

travel mm : 3.40...3.90

3rd speed rpm : 880

: 5.60...6.10 travel mm 4th speed rpm : 1107

travel mm

: 8.00...8.50

5th speed : 1209 rpm

: 9.80...10.20 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1130

Rack travel in mm : 9.90...12.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 1050 Speed Del.quantity : 118.0...120.0 1000 : (115.5...122.5) cm3 : 8.50 1000 : (13.00) Spread RATED SPEED 1st version Control lever position degrees: 116...124 Testina: 1st rack travel in: 11.20 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 Speed rpm : 1160...1190 4th rack travel in: 1300 Speed rpm : 0.00...1.40 LOW IDLE 1 Control lever position degrees: 67...75 Testing: Speed : 250 rpm Minimum rack trave: 10.00 rpm : 350 Rack travel in mm : 7.50...7.70 CONSTANT REGULATION rpm : 350...450 Speed START CUT-OUT 1/min: 270 (290) Speed FUEL DELIVERY CHARACTERISTICS 1st version Speed : 600 rpm Del.quantity cm3/: 119.0...125.0 1000 s: (116.5...127.5) : 11.00 Spread cm31000 s: (14.0) : 1050 Speed rpm Del.quantity cm3/: 88.0...90.0 1000 s: (85.5...92.5) cm3 : 11.00 Spread 1000 s: (14.0) **BREAKAWAY** 1st version

full load rack tr: 11.20 Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 130.0...150.0 1000 s: (126.0...154.0)

Remarks:

:

H07

1mm rack travel less than

Note remarks

Test sheet

: 20.09.91 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 401 848 798

Injection pump

Pump designation: PE8P110A320LS3846-2

EP type number : 0 411 818 725

Governor

Governor design. : RQ300/1050PA187-25

: 0 421 801 482 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM442

1st version kW : 213.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 101

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.40...4.50 : (4.35...4.55) Prestroke mm

Rack travel in mm : 9.00...12.00

Firing order : 8-7-2-6-3-5-4

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 12.20...12.30

Del.guantity cm3/: 12.0...12.2

100 s: (11.7...12.4)

cm3 : C.8 Spread

100 s: (1.3)

2nd speed rpm : 300.0 Rack travel in mm : 7.5...8.1

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.4) Spread cm3 : 0.6

100 s: (0.9)

GUIDE SLEEVE POSITION

Control-Lever position

Degree: -1

rpm : 650

Rack travel in mm : 13.10...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

: 120.0...122.0 Del.quantity

1000 : (117.5...124.5)

: 8.50 Spread cm3

1000 : (13.00)

RATED SPEED

1st version

Setting point:

Speed

Rack travel in mm: 13.5

Testing:

1st rack travel in: 11.20

rpm : 1090...1100

2nd rack travel in: 4.00

Speed rpm: 1175...1205 4th rack travel in: 1300 Speed

Speed rpm : 0.00...2.00

LOW IDLE 1

Setting point w/out bumper spring

rpm : 300 Rack travel in mm: 7.8

Testing:

Speed rpm : 200 Minimum rack trave: 9.50

Speed rpm : 300 Rack travel in mm : 7.50...8.10

Rack travel in mm : 2.00 Speed rpm : 390...430

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600

Del.quantity cm3/: 121.0...127.0

1000 s: (118.5...129.5)

Spread cm3 : 11.00

1000 s: (14.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.20

Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0)

:

Remarks:

Note remarks

Test sheet

: 20.09.91 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 401 848 816

Injection pump

Pump designation : PE8P110A320LS3846-2

EP type number : 0 411 818 725

Governor

Governor design: : RQ300/1050PA1007

: 0 421 801 588 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M442

1st version kW : 195.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 101 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50

: (4.35...4.55)

Rack travel in mm : 9.00...12.00

: 8- 7- 2- 6- 3- 5-

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

Firing order

1st speed rpm: 1050

Rack travel in mm : 11.90...12.00

Del.quantity cm3/: 11.4...11.6

100 s: (11.1...11.8)

Spread cm3 : 0.8

100 s: (1.3)

2nd speed rpm : 300.0

Rack travel in mm: 7.7...8.3 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.4)

Spread cm3 : 0.6

100 s: (1.1)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 Speed rpm : 650

Rack travel in mm : 13.10...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 114.0...116.0

1000 : (111.5...118.5)

Spread

cm3 : 8.50 1000 : (13.00)

RATED SPEED

1st version

Setting point:

Speed rpm

Rack travel in mm: 13.5

Testing:

1st rack travel in: 10.90

Speed rpm: 1090...1100 2nd rack travel in: 4.00

Speed rpm : 1170...1200 4th rack travel in: 1300

rpm : 0.00...2.00 Speed

LOW IDLE 1

Setting point w/out bumper spring

rpm : 300 Rack travel in mm: 8.0

Testing:

Speed rpm : 200 Minimum rack trave: 9.50

Speed rpm : 300
Rack travel in mm : 7.70...8.30
Rack travel in mm : 2.00
Speed rpm : 390...430

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 600 Speed

Del.quantity cm3/: 114.0...120.0 1000 s: (111.5...122.5)

cm3 : 11.00 Spread

1000 s: (14.)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.90

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 130.0...150.0 1000 s: (126.0...154.0)

Remarks:

H11

Note remarks

Test sheet : FIA 17,2 g1 : 03.02.93 Edition

: 11.91 Replaces Test oil : ISO-4113

Combination no. : 0 401 848 822

Injection pump

Pump designation: PE8P120A920/5LS3857

EP type number : D 411 828 725

Governor

Governor design. : RQV300...1200PA357

Governer no. : 0 421 813 188

Customer-spec. information Customer : IVECO-FIAT

Engine : 8280.02.412

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 U25

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Openina .

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.85...2.95 : (2.85...3.00)

Rack travel in mm : 9.00...12.00

Firing order

: 1-8-4-3-6-5-

Phasing

: 0-45-90-135-180-225-

270-315

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 8.00...8.10

Del.quantity cm3/: 14.1...14.3

100 s: (13.8...14.6)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm: 4.0...4.4 Del.quantity cm3/: 1.7...2.3 100 s: (1.4...2.6)

Spread cm3 : 0.3100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1295

: 9.10...9.30 travel mm

rpm : 250 2nd speed

: 0.70...1.10 travel mm

3rd speed rpm : 500

travel mm : 3.30...3.90 4th speed rpm : 800

travel mm : 5.10...5.50

rpm : 1500 5th speed

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1330 Rack travel in mm : 6.30...8.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1200 Speed

Del.quantity : 141.0...143.0

1000 : (138.0...146.0)

Spread

cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 114...122

Testing:

1st rack travel in: 7.00

rpm : 1290...1300 Speed

2nd rack travel in: 4.00

rpm : 1335...1365 Speed

4th rack travel in: 1500

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 60...68

Testina:

Speed rpm : 100

Minimum rack trave: 5.70 Speed rpm : 300

Rack travel in mm : 4.10...4.30

CONSTANT REGULATION

Speed rpm : 310...440

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600 Del.quantity cm3/ : 139.0...145.0 1000 s: (136.0...148.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 7.00

rpm : 1290...1300 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 220.0...250.0 1000 s: (216.0...254.0)

LOW IDLE

Speed rpm : 300

Rack travel in mm : 4.00...4.40

Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0)

H13

Spread

cm3 : 8.00

1000 s: (12.00)

Remarks:

Check electrically unlatched starting

fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 3.90...4.00 : (3.85...4.05) Note remarks Rack travel in mm : 9.00...12.00 : 10- 9- 4- 1- 8- 7-6- 3- 5- 2 Firing order Test sheet : MAN 18,2 g Edition : 05.01.90 : 11.89 Replaces Test oil : ISO-4113 Phasing : 0-45-72-117-144-189-Combination no. : 0 401 849 746 216-261-288-333 Tolerance + - ° : 0.50 (0.75) Injection pump Pumo designation : PE10P120A520/4LS3855 Time to cyl. no. : 10 Ep type number : 0 411 829 709 Governor BASIC SETTING Governor design. : RQV300...1000PA838 : 0 421 813 585 Governer no. 1st speed rpm: 1000 Customer-spec. information Rack travel in mm : 10.50...10.60 Customer : MAN Del.quantity cm3/: 20.4...20.6 : D2840LF/460 Engine 100 s: (20.1...20.9) 1st version kW : 338.0 : 2000 Rated speed Spread cm3 : 0.5TEST BENCH REQUIREMENTS 100 s: (0.9) Test oil 2nd speed rpm : 300.0inlet temp. °C : 38...42 Rack travel in mm: 5.2...5.4 Del.quantity cm3/: 1.7...2.3 100 s: (1.4...2.6) Overflow valve : 1 417 413 025 cm3 : 0.8Spread 100 s: (1.2) Inlet press., bar: 1.50 (B) Setting of injection pump Test nozzle holder with governor : 1 688 901 019 assembly GUIDE SLEEVE TRAVEL Openina rpm : 300 1st speed : 1.00...1.40 pressure, bar : 207...210 travel mm rpm : 500 2nd speed Orifice plate : 3.10...3.50 travel mm diameter mm rpm : 850 : 0,8 3rd speed travel mm : 6.60...6.90 4th speed rpm : 1000 Test lines : 1 680 750 067 : 7.70...7.90 travel mm Outside diameter GUIDE SLEEVE POSITION x Wall thickness Control-lever position : 6.00x1.50x1000 x Length mm Degree: -1 rpm : 1025 Speed (A) Injection pump setting values Rack travel in mm : 15.20...17.80 Insp. values in parentheses Set equal delivery quant. FULL LOAD DELIV. AT FULL LOAD STOP per values _ 1st version BEGINNING OF DELIVERY Speed rpm : 1000

Aneroid pressure h: 1000

Test pressure, bar: 25...27

: 204.0...206.0 Del.quantity 1000 : (201.0...209.0)

: 5.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version: Control lever

position degrees: 116...124

Testing:

1st rack travel in: 9.50

rpm : 1040...1050 Speed

2nd rack travel in: 4.00

rpm : 1105...1135 Speed

4th rack travel in: 1250

npm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 80...88

Testing:

Speed : 100 MCC Minimum rack trave: 6.80 : 300 rpm

Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

rpm : 335...445 Speed

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 500 rom hPa : 1000 Pressure

Rack travel mm : 10.50...10.60

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.20...9.40

2nd pressure hPa : 380

Rack travel in m: 9.60...9.70

3rd pressure hPa : 500

Rack travel in m: 10.10...10.30

START CUT-OUT

Speed 1/min: 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

H15

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 144.0...146.0

1000 s: (141.0...149.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.50

Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100

bel.quantity cm3/: 190.0...210.0

1000 s: (186.0...214.0)

LOW IDLE

rpm : 300 Speed

Rack travel in mm : 5.20...5.40

Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0)

cm3 : 8.00Spread

1000 s: (12.00)

Remarks:

: MAN-NR. 2-7779

Note remarks

Test sheet : DAF 11,7 f : 27.11.92 Edition

: 06.90 Replaces Test oil : ISO-4113

Combination no. : 0 401 876 335

Injection pump

Pump designation : PE6P120A320RS415-1

EP type number : 0 411 826 123

Governor

Governor design. : RSV250...1100P5A508

: 0 421 833 298 Governer no.

Customer-spec. information Customer : DAF

Engine : DKV 1160

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 650

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 17.1...17.3

100 s: (16.8...17.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0 Rack travel in mm: 6.7...6.9 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3) cm3 : 0.8 Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

> Degree: -3 rpm : 800

Speed Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 650 Aneroid pressure h: 700

: 171.0...173.0 Del.quantity 1000 : (168.5...175.5)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 95...103

Testing:

1st rack travel in: 9.10

rpm : 1135...1145 Speed

2nd rack travel in: 4.00

rpm : 1175...1205 Speed

3rd rack travel in: 4.00 rpm : 1200...1230 Speed 4th rack travel in: 1375 rpm : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 66...74 Setting point w/out bumper spring rpm : 250 Rack travel in mm: 5.8 Testing: : 100 : 250 Speed rom Speed rpm Rack travel in mm : 6.20...6.40 Rack travel in mm: 2.00 Speed COM : 630...730 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1090 Rack travel in m: 10.10...10.20 2nd speed rpm : 650 Rack travel in m: 11.40...11.50 3rd speed rpm : 800 Rack travel in m: 10.80...11.00 4th speed rpm : 850 Rack travel in m: 10.40...10.70 Aperoid/Altitude Compensator Test 1st version Setting Speed : 600 rpm Pressure hPa : 700 Rack travel mm : 11.10...11.20 Measurement 1/min: 600 Speed 1st pressure hPa : -Rack travel in m: 9.50...9.70 2nd pressure hPa : 290 Rack travel in m: 10.70,..10.90 3rd pressure hPa : 260 Rack travel in m: 10.20...10.50 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 rpm : 1090

Del.quantity cm3/: 159.0...161.0

rpm : 600

Aneroid pressure h: -

1000 s: (156.0...164.0)

Del.quantity cm3/: 129.0...131.0 1000 s: (126.5...133.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.10 Speed rpm : 1135...1145 STARTING FUEL DELIVERY : 100 Speed rom Del.quantity cm3/: 310.0...350.0 1000 s: (306.0...354.0) Rack travel in mm : 19.50...21.00 LOW IDLE

rpm : 250

:

Rack travel in mm : 6.20...6.40

Remarks:

Speed

H17

Speed

Speed

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : DAF 11,7 f1 : 27.11.92 Edition Replaces : 06.90 Test oil : 1S0-4113 Combination no. : 0 401 876 338 Injection pump Pump designation : PE6P12DA32DRS415-1 EP type number : 0 411 826 123 Governor Governor design. **-9** Governer no. : 0 421 833 321 Customer-spec. information Customer Engine : KS 238 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 019 assembly Opening pressure, bar : 207...210 Orifice plate diameter mm : 0,8 Test lines : 1 680 750 067 Outside diameter x Wall thickness : 6.00X1.50X1000 x Length mm (A) Injection pump setting values Insp. values in parentheses

: RSV250...1100P5A508 Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 25...27 Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) BASIC SETTING 1st speed rpm : 650 Rack travel in mm: 11.90...12.00 Del.quantity cm3/: 18.8...19.0 100 s: (18.5...19.2) Spread cm3 : 0.5100 s: (0.9) rpm : 250.0 2nd speed Rack travel in mm: 6.6...6.8 Del.quantity cm3/: 1.7...2.3 100 s: (1.4...2.6) Spread cm3 : 0.8100 s: (1.2) GUIDE SLEEVE POSITION Control-lever position Degree: -3 Speed rpm : 800 Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x : 5.00FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 650 Aneroid pressure h: 700 : 188.0...190.0 Del.quantity 1000 : (185.5...192.5) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 99...107 Testing: 1st rack travel in: 10.00 rpm : 1130...1140 Speed 2nd rack travel in: 4.00 Speed rpm : 1185...1215

3rd rack travel in: 4.00 Speed rpm : 1225...1255 4th rack travel in: 1400 rpm : 0.30...1.40 Speed LOW IDLE 1 Control Lever position degrees: 70...78 Setting point w/out bumper spring rpm : 250 Rack travel in mm: 6.0 Testing: Speed rpm : 100 Speed rpm : 250 Rack travel in mm : 6.40...6.60 Rack travel in mm : 2.00 rpm : 600...700 Speed TORQUE CONTROL Torque control curve - 1st version rpm : 1090 1st speed Rack travel in m: 11.00...11.10 2nd speed rpm : 650 Rack travel in m: 12.20...12.30 3rd speed rpm : 760 Rack travel in m: 11.60...11.80 4th speed rpm : 810 Rack travel in m: 11.20...11.40 Aneroid/Altitude Compensator Test 1st version Setting Speed LOW : 600 Pressure hPa : 700 Rack travel mm : 11.90...12.00 Measurement $1/\min : 600$ Speed 1st pressure hPa : -Rack travel in m: 9.70...9.90 2nd pressure hPa : 300 Rack travel in m: 11.30...11.40 3rd pressure hPa : 230 Rack travel in m: 10.40...10.70 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 rpm : 1090 Speed Del.quantity cm3/: 181.0...183.0 1000 s: (178.0...186.0)

Del.quantity cm3/: 131.0...133.0 1000 s: (128.5...135.5)

BREAKAWAY

1st version imm rack travel less than

full load rack tr: 10.00 rpm : 1130...1140 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 290.0...330.0 1000 s: (286.0...334.0) Rack travei in mm : 19.50...21.00

LOW IDLE

rpm : 250 Speed Rack travel in mm : 6.40...6.60

Remarks:

H19

Speed

Aneroid pressure h: -

rpm : 600

Note remarks

Test sheet : PEN 7,1 d : 7.7.93 Edition : 23.10.91 Replaces

Test oil : ISO-4113

Combination no. : 0 401 876 749

Injection pump

Pump designation : PE6P120A320RS3163

EP type number : 0 411 826 750

Governor

Governor design. : RSV250...1250P0A374

: 0 421 833 222 Governer no.

Customer-spec. information

: VOLVO-PENTA Customer

Engine : TAMD 71 A

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

Firing order

1st speed rpm: 1000

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 21.6...21.8

100 s: (21.3...22.1)

: 1-5-3-6-2-4

cm3 : 0.5Spread

100 s: (0.9)

2nd speed npm : 250.0

Rack travel in mm: 4.0...4.2 Del.quantity cm3/: 1.1...1.6

100 s: (0.8...1.8)

Spread cm3 : 0.5

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1500

: 216.0...218.0 Del.quantity

1000 : (213.0...221.0) cm3 : 5.00

Spread

1000 : (9.00)

RATED SPEED

1st version

Control Lever

position degrees: 103...111

Testing:

1st rack travel in: 11.80

rpm : 1290...1300

2nd rack travel in: 4.00

H20

Speed rpm : 1370...1400 4th rack travel in: 1500

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 72...80

Setting point w/out bumper spring Speed rpm : 250

Rack travel in mm: 3.6 : 250 Speed rom

Rack travel in mm : 4.00...4.20

Rack travel in mm : 2.00

Speed : 360...420 rom

Aneroid/Altitude Compensator Test

1st version Setting

Speed rpm : 500 hPa : 1500 Pressure

Rack travel mm : 12.80...12.90

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 7.80...8.00

2nd pressure hPa : 310 Rack travel in m: 8.00...8.10

3rd pressure hPa : 1000

Rack travel in m: 12.40...12.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 1000 Del.quantity cm3/: 116.0...118.0 1000 s: (113.0...121.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.80

rpm : 1290...1300 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 170.0...200.0

1000 s: (166.0...204.0)

LOW IDLE

Speed rpm : 250

Rack travel in mm : 4.00...4.20 Del.quantity cm3/: 11.0...16.0

1000 s: (8.5...18.5)

cm3 : 5.00Spread

1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90

APPLICATION

Navy

H21

Note remarks

Test sheet

: MAN 11,9g10

Edition Replaces : 21.08.91

: 08.91

Test oil

: ISO-4113

Combination no. : 0 402 036 086

Injection pump

Pump designation: PES6P110A720/3LS477-

EP type number

: 0 412 016 071

Governor

Governor design: RQ250/1050PA845-2

Governer no.

: 0 421 801 604

Customer-spec. information Customer

: MAN

Snaine

: D2866 F/UM

1st version kW

: 152.0

Rated speed

: 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 0 681 343 009

Openina

pressure, bar

: 172...175

Test lines

: 1 680 750 015

Outside diameter

x Wall thickness

x Length mm

: 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm

: 3.50...3.60

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order

: 6-2-4-1-5-3

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed

Spread

rpm: 800

Rack travel in mm : 10.90...11.00

Del.quantity cm3/: 10.0...10.3

100 s: (9.7...10.5)

cm3 : 0.4

100 s: (0.7)

rpm : 250.02nd speed

Rack travel in mm: 6.0...6.2

Del.quantity cm3/: 1.5...2.0

100 s: (1.2...2.2) Spread

cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed

rpm : 800

Del.quantity : 100.0...103.0

1000 : (97.5...105.5)

Spread cm3

: 4.00 1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rom Rack travel in mm: 20.0

Testing:

Speed

Speed

1st rack travel in: 9.90

rpm : 1095...1110

2nd rack travel in: 4.00

rpm : 1170...1200

4th rack travel in: 1350 Speed #2m : 0.00...1.00 LOW IDLE 1 Setting point w/out bumper spring rpm : 250 Rack travel in mm: 6.1 Testing: Speed rpm : 100 Minimum rack trave: 7.60 rpm : 250 Rack travel in mm : 6.00...6.20 Rack travel in mm : 2.00 Speed : 330...370 rom TORQUE CONTROL Dimension a mm : -Torque control curve - 1st version rpm : 800 1st speed Rack travel in m: 10.90...11.00 rpm : 1050 2nd speed Rack travel in m: 10.80...11.00 START CUT-OUT Speed 1/min : 170 (190) FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 1050 Del.quaritity cm3/: 110.0...114.0 1000 s: (107.0...117.0) Speed rpm : 500 Del.quantity cm3/ : 92.0...96.0 1000 s: (89.0...99.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.90 rpm : 1095...1110 Speed STARTING FUEL DELIVERY

rpm : 100 Del.quantity cm3/: 110.0...130.0 1000 s: (106.0...134.0)

: 250

rpm Rack travel in mm : 6.00...6.20 Del.quantity cm3/: 15.0...20.0 1000 s: (12.5...22.5) Spread cm3 : 4.501000 s: (7.50)

Remarks:

: MAN-NR. 3-7156

LOW IDLE

Note remarks

Test sheet

: MAN Edition : 18.12.91

Replaces

Test oil

: ISO-4113

Combination no.

: 0 402 036 088

Injection pump

Pump designation: PES6P110A720/3LS477-

EP type number

: 0 412 016 071

Covernor

Governor design. : RQ300/750PA845-3

Governer no.

: 0 421 801 630

Customer-spec. information Customer

: MAN

Engine

: D2866 UH

1st version kW

: 133.0

Rated speed

: 1500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 0 681 343 009

Opening

pressure, bar

: 172...175

Test lines

: 1 680 750 015

Outside diameter

x Wall thickness

x Length mm

: 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm

: 3.50...3.60

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order

: 6-2-4-1-5-3

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed

rpm: 750

Rack travel in mm : 11.80...11.90

Del.quantity cm3/: 12.6...12.9

100 s: (12.3...13.1)

cm3 : 0.4

100 s: (0.7)

rpm : 300.0

Rack travel in mm: 6.0...6.2

Del.quantity cm3/: 1.5...2.0 100 s: (1.2...2.2)

cm3 : 0.4

Spread

2nd speed

Spread

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed

rpm : 750

Del.quantity

: 126.0...129.0

1000 : (123.5...131.5)

Spread

: 4.00 cm3 1000 : (7.50)

RATED SPEED

1st version

Setting point: Speed

: 600 rpm

Rack travel in mm: 20.0

Testing:

1st rack travel in: 10.80

rpm : 795...810

Speed 2nd rack travel in: 4.00

Speed

rpm : 830...860

4th rack travel in: 1000

rpm : 0.00...1.00 Speed

LOW IDLE 1

Setting point w/out bumper spring

rpm : 300 Rack travel in mm: 6.1

Testing:

Speed rpm : 100 Minimum rack trave: 7.60 Speed rpm : 300
Rack travel in mm : 6.00...6.20
Rack travel in mm : 2.00
Speed rpm : 350...410

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 750

Rack travel in m: 11.80...11.90 2nd speed rpm : 500

Rack travel in m: 11.80...12.00

START CUT-OUT

1/min : 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 500 Speed

Del.quantity cm3/: 117.0...121.0

1000 s: (114.0...124.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.80

Speed rom : 795...810

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 110.0...130.0 1000 s: (106.0...134.0)

LOW IDLE

Speed rpm : 300

Rack travel in mm : 6.00...6.20

Del.quantity cm3/: 15.0...20.0 1000 s: (12.5...22.5) Spread cm3: 4.50

1000 s: (7.50)

Remarks:

: MAN-NR. 3-7187

APPLICATION

Rail car

H25

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 3.20...3.30 Note remarks : (3.15...3.35) Rack travel in mm : 9.00...12.00 Test sheet : CUN Firing order : 1-5-3-6-2-4 Edition : 22.01.93 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 402 036 749 Tolerance + - ° : 0.50 (0.75) Injection pump Pump designation : PES6P110A120RS3286 Time to cyl. no. EP type number : 0 412 016 737 Governor BASIC SETTING Governor design. : RQV350...1150PA1014 -2K 1st speed rpm: 1100 Governer no. : 0 421 815 296 Rack travel in mm : 15.30...15.40 Customer-spec. information Customer : CUMMINS Del.quantity cm3/; 15.1...15.3 Engine : 6CTA-A 100 s: (14.9...15.5) 1st version kW : 168.0 cm3 : 0.4Spread Rated speed : 2300 100 s: (0.7) TEST BENCH REQUIREMENTS rpm : 350.0 2nd speed Test oil Rack travel in mm: 5.7...5.9 Del.quantity cm3/: 1.3...1.7 inlet temp. °C : 38...42 100 s: (1.0...1.9) Overflow valve Spread cm3 : 0.6: 1 419 992 198 100 s: (0.9) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder assembly : 1 688 901 101 GUIDE SLEEVE TRAVEL 1st speed rpm : 350 Openina | : 2.10...2.40 travel mm 2nd speed pressure, bar : 207...210 : 450 rpm : 3.40...3.80 travel mm Orifice plate : 900 3rd speed rpm diameter mm : 0,6 travel mm : 5.60...6.00 4th speed rpm : 1200 travel mm : 8.10...8.30 Test lines : 1 680 750 008 5th speed rom : 1400 travel mm : 10.20...10.60 Outside diameter x Wall thickness FULL LOAD DELIV. AT FULL LOAD STOP x Length mm : 6.00x2.00x600 1st version (A) Injection pump setting values Speed rpm : 1100Insp. values in parentheses Aneroid pressure h: 1200 Set equal delivery quant. Del.quantity : 151.0...153.0 per values 1000 : (149.0...155.0) Spread cm3 : 4.00 BEGINNING OF DELIVERY 1000 : (7.50)

Test pressure, bar: 22...24

RATED SPEED

1st version

Control lever

position degrees: 55...63

Testing:

1st rack travel in: 14.10

rpm : 1215...1225 Speed

2nd rack travel in: 4.00

Speed rpm: 1380...1410 4th rack travel in: 1500

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 12...20

Testing:

Speed rom

Minimum rack trave: 7.30

Speed rpm : 350 Rack travel in mm : 5.70...5.90

CONSTANT REGULATION

Speed rpm : 350...650

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 15.30...15.40 2nd speed rpm : 750 Rack travel in m: 14.00...14.40

rpm : 1150 3rd speed

Rack travel in m: 15.10...15.30

4th speed rpm : 650

Rack travel in m: 13.80...14.20

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed : 1100 CDM

Pressure hPa : 1200

: 15.30...15.40 Rack travel mm

Measurement

Speed 1/min: 1100

1st pressure hPa : -

Rack travel in m: 8.90...9.30

2nd pressure hPa : 250 Rack travel in m: 10.60...10.70

3rd pressure hPa : 560

Rack travel in m: 13.60...14.00

START CUT-OUT

H27

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 750
Del.quantity cm3/: 152.0...156.0
1000 s: (150.0...158.0)
Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quartity cm3/: 74.5...78.5

1000 s: (72.5...80.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.10

rpm : 1215...1225 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm5/ : 135.0...175.0

1000 s: (130.0...180.0)

LOW IDLE

rpm : 350 Speed

Rack travel in mm : 5.70...5.90 Del.quantity cm3/: 13.0...17.0 1000 s: (10.5...19.5)

Spread cm3 : 6.00

1000 s: (9.00)

Remarks:

: C.D.C. # 3921971

Start-of-delivery mark = 5.5° after

start of delivery cyl. 1.

Note remarks

Test sheet : CUM

: 22.01.93 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 036 750

Injection pump

Pump designation : PES6P110A120RS3286

EP type number : 0 412 016 737

Governor

Governor design. : RQV350...1150PA1014

: 0 421 815 298 Governer no.

Customer—spec. information Customer : CDC

Engine : 6CTA-A

1st version kW : 156.5 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 3.20...3.30

: (3.15...3.35) Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm : 11001st speed

Rack travel in mm : 14.50...14.60

Del.quantity cm3/: 14.1...14.3

100 s: (13.9...14.5)

cm3 : 0.4Spread

100 s: (0.7)

2nd speed rpm : 350.0Rack travel in mm : 5.8...6.0 Del.quantity cm3/ : 1.7...2.1

100 s: (1.4...2.3)

Spread cm3 : 0.6100 s: (0.9)

(8) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 350 1st speed

travel mm : 2.10...2.40

rpm : 4502nd speed

: 3.40...3.80 travel mm

3rd speed rpm : 900

: 5.60...6.00 travel mm

4th speed : 1200 rpm

travel mm : 8.10...8.30

5th speed : 1400 man

: 10.20...10.60 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed Aneroid pressure h: 1200

: 141.5...143.5 Del.quantity

1000 : (139.5...145.5)

: 4.00 Spread cm3

1000 : (7.50)

RATED SPEED 1st version Control lever position degrees: 52...60 Testing: 1st rack travel in: 13.30 rpm : 1220...1230 Speed 2nd rack travel in: 4.00 rpm : 1365...1395 Speed 4th rack travel in: 1500 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 10...18 Testing: Speed rom Minimum rack trave: 7.30 Speed rpm : 350 Rack travel in mm : 5.80...6.00 CONSTANT REGULATION Speed rpm : 350...520 TORQUE CONTROL Dimension a mm : ? Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 14.50...14.60 nd speed rpm : 750 2nd speed Rack travel in m: 13.40...13.60 : 1150 3rd speed rpm Rack travel in m: 14.30...14.50 4th speed rpm : 650 Rack travel in m: 13.10...13.50 Aneroid/Altitude Compensator Test 1st version Setting Speed : 1100 rom Pressure hPa : 1200 Rack travel mm : 14.50...14.60 Measurement Speed 1/min : 1100 1st pressure hPa : -Rack travel in m: 8.90...9.30 2nd pressure hPa : 250

Rack travel in m: 10.60...10.70

Rack travel in m: 13.60...14.00

3rd pressure hPa : 560

1/min: 290 (300) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 : 750 Speed rpm Del.quantity cm3/: 137.0...141.0 1000 s: (135.0...143.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 74.5...78.5 1000 s: (72.5...80.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.30 Speed rpm : 1220...1230 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 135.0...175.0 1000 s: (130.0...180.0) LOW IDLE Speed rpm : 350 Rack travel in mm : 5.80...6.00 Del.quantity cm3/: 17.0...21.0 1000 s: (14.5...23.5) Spread cm3 : 6.00 1000 s: (9.00) Remarks: : C.D.C. # 3921972 Start-of-delivery mark = 5.5° after start of delivery cyl. 1.

J01

START CUT-OUT

Note remarks

Test sheet

Edition

: CUM

: 22.01.93

Replaces

Test oil

: ISO-4113

Combination no. : 0 402 036 751

Injection pump

Pump designation : PES6P110A120RS3286

EP type number

: 0 412 016 737

Governor

Governor design.

: RQV350..1200PA1014

-4K

Governer no.

: 0 421 815 299

Customer spec. information Customer

: CDC

Engine

: 6CTA-A

1st version kW

: 156.5

Rated speed

: 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 1 688 901 101

Openina

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,6

Test Lines

: 1 680 750 008

Outside diameter

x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm

: 3.20...3.30

: (3.15...3.35)

Rack travel in mm : 9.00...12.00

Firing order

: 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

Spread

2nd speed

rpm: 1100

Rack travel in mm : 14.50...14.60

Del.guantity cm3/: 14.1...14.3

100 s: (13.9...14.5)

cm3 : 0.4

100 s: (0.7)

rpm : 350.0

Rack travel in mm: 5.8...6.0

Del.quantity cm3/: 1.7...2.1 100 s: (1.4...2.3)

Spread cm3 : 0.6

100 s: (0.9)

(B) Setting of injection pump

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

with governor

travel mm

: 2.10...2.40

2nd speed

rpm : 450

travel mm 3rd speed

: 3.40...3.80 rpm : 900

travel mm

: 5.60...6.00

rpm : 1200 4th speed

travel mm

: 8.10...8.30

5th speed rpm : 1400

travel mm

: 10.20...10.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Spread

rpm : 1100

Aneroid pressure h: 1200

: 141.5...143.5

Del.quantity

1000 : (139.5...145.5)

cm3 : 4.00

1000 : (7.50)

J02

RATED SPEED 1st version Control lever position degrees: 54...62 Testing: 1st rack travel in: 13.30 Speed rpm : 1270...1280 2nd rack travel in: 4.00 rpm : 1400...1430 Speed 4th rack travel in: 1500 Speed rpm : 0.00...1.00LOW IDLE 1 Control Lever position degrees: 10...18 Testing: Speed וחמיו Minimum rack trave: 7.30 rpm : 350 Rack travel in mm : 5.80...6.00 CONSTANT REGULATION Speed rpm : 350...520 TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version rpm : 1100 1st speed Rack travel in m: 14.50...14.60 2nd speed rpm : 750 Rack travel in m: 13.40...13.60 d speed rpm : 1150 Rack travel in m: 14.30...14.50 3rd speed 4th speed : 650 rpm Rack travel in m: 13.10...13.50 Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 1100 Pressure hPa : 1200 Rack travel mm : 14.50...14.60 Measurement 1/min: 1100 Speed 1st pressure hPa : -Rack travel in m: 8.90...9.30 2nd pressure hPa : 215
Rack travel in m: 10.40...10.50 3rd pressure hPa : 475 Rack travel in m: 13.00...13.40 START CUT-OUT

1/min: 290 (300) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 Speed rpm : 750 Del.quantity cm3/ : 137.0...141.0 1000 s: (135.0...143.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: rpm_ : 500 Speed Del.quantity cm3/: 74.5...78.5 1000 s: (72.5...80.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.30 rpm : 1270...1280 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 135.0...175.0 1000 s: (130.0...180.0) LOW IDLE Speed rpm : 350 Rack travel in mm : 5.80...6.00 Del.quantity cm3/: 17.0...21.0 1000 s: (14.5...23.5) cm3 : 6.00Spread 1000 s: (9.00) Remarks: : C.D.C. # 3921973 Start-of-delivery mark = 5.5° after start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS : 2.80...2.90 Prestroke mm : (2.75...2.95) Note remarks Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order Test sheet : RVI : 20,03,92 Edition Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 402 046 340CL Tolerance + - ° : 0.50 (0.75) Injection pump Time to cyl. no. : 1 Pump designation : PES6P120A320RS525 EP type number : 0 412 026 058 BASIC SETTING Governor rpm: 1050Governor design. : RQV300...1050PA955 1st speed : 0 421 813 856 Governer no. Rack travel in mm : 9.40...9.50 Customer-spec. information Customer : RVI Del.quantity cm3/: 13.8...14.0 Engine : MIDS062045J 100 s: (13.5...14.3) 1st version kW : 160.0 Spread cm3 : 0.5: 2100 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 300.0 Rack travel in mm : 5.3...5.7 Del.quantity cm3/ : 1.5...2.1 Test oil inlet temp. °C : 38...42 100 s: (1.2...2.4) Overflow valve Spread cm3 : 0.8: 1 417 413 025 100 s: (1.2) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 019 assembly GUIDE SLEEVE TRAVEL rpm : 1050 1st speed Opening : 8.00...8.20 travel mm pressure, bar : 207...210 rpm : 300 2nd speed travel mm : 1.10...1.50 Orifice plate 3rd speed rpm : 430 diameter mm : 0,8 travel mm : 3.40...4.00 4th speed : 1400 rpm : 11.00...12.00 travel mm Test lines : 1 680 750 067 GUIDE SLEEVE POSITION Outside diameter Control-lever position x Wall thickness Degree: -1 x Length mm : 6.00x1.50x1000 rpm : 1075 Speed Rack travel in mm: 15.20...17.80 (A) Injection pump setting values Insp. values in parentheses FULL LOAD DELIV. AT FULL LOAD STOP Set equal delivery quant. per values 1st version Speed rpm : 1050 BEGINNING OF DELIVERY : 138.0...140.0 Del.quantity

1000 : (135.0...143.0)

Test pressure, bar: 25...27

Spread

: 5.00 cm3

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 298...306

Testing:

1st rack travel in: 8.40

rpm : 1130...1140 Speed

2nd rack travel in: 4.20

rpm : 1190...1220 Speed

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 244...252

Testing:

rpm : 200 Speed

Minimum rack trave: 7.40

rpm : 300 Speed

Rack travel in mm : 5.00...5.20

CONSTANT REGULATION

Speed rpm : 310...430

START CUT-OUT

Speed

1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

: 700 Speed rpm

Del.quantity cm3/: 126.0...134.0 1000 s: (123.0...137.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.40

rpm : 1130...1140 beea

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0)

LOW IDLE

rpm : 300

Rack travel in mm : -4.20...-4.40

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

J05

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : UNI : 9.7.1993 Test sheet Edition Replaces Test oil : ISO-4113 Combination no. : 0 402 046 346 Injection pump Pump designation : PES6P110A720RS530 EP type number : 0 412 016 075 Governor : RQV450...1050PA1016 Governor design. -2 Governer no. : 0 421 813 967 Customer-spec. information Customer : IVECO-UNIC Engine : 8365,25,532 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 Opening : 172...175 pressure, bar Test lines : 1 680 750 015 Outside diameter x Wall thickness : 6.00x1.50x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27 Prestroke mm : 2.00...2.10 : (1.95...2.15) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-J06

Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 700 Rack travel in mm : 9.80...9.90 Del.quantity cm3/: 11.6...11.8 100 s: (11.4...12.1) cm3 : 0.4Spread 100 s: (0.7) rpm : 450.02nd speed Rack travel in mm: 5.4...5.8 Del.quantity cm3/: 1.7...2.2 100 s: (1.4...2.4) Spread cm3 : 0.4100 s: (0.7) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 1095 1st speed : 6.70...6.90 travel mm 2nd speed : 450 rpm : 0.70...1.10 travel mm 3rd speed non : 700 : 3.30...3.90 travel mm 4th speed : 850 rpm : 4.80...5.20 travel mm 5th speed : 1650 rom travel mm : 11.00...12.00 GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1430 Speed Rack travel in mm : 8.50...11.10 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 700 Aneroid pressure h: 700 Anerus Del.quantity 1000 : 116.5...118.5 : (114.0...121.0) : 4.00 Spread cm3 1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 96...106

Testing:

1st rack travel in: 8.80

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

rpm : 1195...1225 Speed

4th rack travel in: 1400

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 66...74

Testina:

Speed rpm Minimum rack trave: 7.70 : 450 rpm Speed

Rack travel in mm : 5.50...5.70

Rack travel in mm : 2.00

Speed rom : 510...570

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm Pressure hPa : 700

: 9.80...9.90 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.10...9.30

2nd pressure hPa : 400

Rack travel in m: 9.60...9.70

3rd pressure hPa : 380

Rack travel in m: 9.30...9.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

Speed rpm : 1050 Del.quantity cm3/ : 113.0...117.0 1000 s: (110.0...120.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 97.0...99.0 1000 s: (94.5...101.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.80

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 195.0...225.0 1000 s: (191.0...229.0)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : UNI 8,3 a 4 Edition : 23.10.92 Replaces : 09.92 : ISO-4113 Test oil Combination no. : 0 402 046 348 Injection pump Pump designation : PES6P110A720RS530 EP type number : 0 412 016 075 Governor Governor design. : RQV450...1100PA1016 : 0 421 813 969 Governer no. Customer-spec. information Customer : IVECO-UNIC **Engine** : 8365.25.533

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10

: (1.95...2.15) Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 13.8...14.0

100 s: (13.5...14.2)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 450.02nd speed Rack travel in mm: 5.9...6.3 Del.quantity cm3/ : 1.7...2.2 100 s: (1.4...2.4)

Spread cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1145

: 6.80...7.00 travel mm

2nd speed rpm : 450

: 1.20...1.60 travel mm

3rd speed : 700 rpm

travel mm : 3.30...3.90 rpm : 950 4th speed

travel mm

: 5.50...5.90

: 1650 5th speed rpm

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1460

Rack travel in mm : 8.80...11.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 700

Del.quantity : 158.0....142.5)

Spread : 4.00 cm3

: (7.50) 1000

RATED SPEED

1st version

Control lever

position degrees: 96...104

Testing:

1st rack travel in: 10.10

Speed rpm : 1140...1150 2nd rack travel in: 4.00

Speed rpm : 1260...1290 4th rack travel in: 1450

rpm : 0.00...1.00Speed

LOW IDLE 1

Control lever

position degrees: 66...74

Testina:

Speed : 325 rpm

Minimum rack trave: 9.60 : 450 Speed rpm

Rack travel in mm : 6.00...6.20

CONSTANT REGULATION

Speed rpm : 470...550

Aneroid/Altitude Compensator Test

1st version

Setting

rpm : 500 hPa : 700 Speed rpm Pressure

: 11.10...11.20 Rack travel mm

Measurement

Speed $1/\min : 500$

1st pressure hPa : -

Rack travel in m: 10.10...10.30 2nd pressure hPa : 480

Rack travel in m: 10.80...10.90

3rd pressure hPa : 440

Rack travel in m: 10.30...10.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700 : 1100 Speed rpm

Del.quantity cm3/: 133.0...137.0

1000 s: (130.0...140.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 111.0...113.0 1000 s: (108.5...115.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 185.0...215.0

1000 s: (181.0...219.0)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

Test sheet : UNI 8,1 b : 18.12.91 Edition : 11.91 Replaces Test oil : ISO-4113

Combination no. : 0 402 046 350

Injection bump

Pump designation : PES6P110A720RS531 EP type number : 0 412 016 076

Governor

Governor design. : RQV300...1100PA1016

: 0 421 813 972 Governer no.

Customer—spec. information Customer : IVECO-UNIC

Engine : 8361.25.510

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.00...2.10 Prestroke mm : (1.95...2.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm: 10.30...10.40

Del.quantity cm3/: 12.0...12.2

100 s: (11.7...12.4)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0Rack travel in mm: 6.0...6.4 Del.quantity cm3/: 1.3...1.8 100 s: (1.0...2.0)

Spread cm3 : 0.4100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1145 1st speed

: 8.30...8.50 travel mm 2nd speed rpm : 300

travel mm

: 0.80...1.20

rpm : 500 3rd speed

travel mm : 2.50...3.10

4th speed rpm : 750

: 4.50...4.90 travel mm

5th speed rpm : 1350

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1240

Rack travel in mm : 8.00...10.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 700

Del.quantity : 120.0...122.0

1000 : (117.5...124.5) Spread : 4.00 cm3

1000 : (7.50) RATED SPEED

1st version

Control lever

position degrees: 117...125

Testing:

1st rack travel in: 9.30

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

Speed rpm : 1205...1235 4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 63...71

Testing:

Speed MC

Minimum rack trave: 7.70 rpm

Rack travel in mm : 6.10...6.30

CONSTANT REGULATION

Speed rpm : 370...490

Aneroid/Altitude Compensator Test

1st version

Settina

Speed : 500 rom Pressure hPa : 700

Rack travel mm : 10.30...10.40

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 8.90...9.20

2nd pressure hPa : 465

Rack travel in m: 9.90...10.00

3rd pressure hPa : 430

Rack travel in m: 9.40...9.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 1100

Del.quantity cm3/: 96.0...98.0 1000 s: (93.5...100.5)

BREAKAWAY

1st version

111

1mm rack travel less than

full load rack tr: 9.30

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 215.0...245.0 1000 s: (211.0...249.0)

LOW IDLE

Speed man : 300

Rack travel in mm : 6.00...6.40

Del.quantity cm3/: 13.0...18.0

1000 s: (10.5...20.5) cm3 : 4.50 Spread

1000 s: (7.50)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS
Note remarks

Test sheet : SSC 10,5 a Edition : 18.12.91 Replaces : 5.84

Test oil : ISO-4113

Combination no. : 0 402 046 738

Injection pump

Pump designation : PES6P120A320RS3092-1

EP type number : 0 412 026 710

Governor

Governor design. : RQV320...1300PA654

Governer no. : 0 421 813 358

Customer-spec. information Customer : SSCM

Engine : 6LC 520 S2

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening |

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1280

Rack travel in mm : 12.30...12.40

Del.quantity cm3/ : 19.8...20.0

100 s: (19.5...20.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 320.0 Rack travel in mm : 7.9...8.1 Del.quantity cm3/ : 2.0...2.6

100 s: (1.7...2.9)

Spread cm3 : 0.8 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm: 300

travel mm : 1.30...1.50

2nd speed rpm : 1000 travel mm : 5.70...6.00

3rd speed rpm : 1300 travel mr : 8.30...8.50

GUIDE SLEEVE POSITION Control-Lever position

Degree: -1 Speed rpm : 1305

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1280

Del.quantity : 198.0...200.0 1000 : (195.0...203.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 61...69

Testing:

1st rack travel in: 12.30

Speed rpm : 1325...1335

2nd rack travel in: 4.00

Speed rpm : 1415...1445 4th rack travel in: 1550

Speed rom : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 13...21

Testina:

rpm : 100 Speed Minimum rack trave: 9.50

Speed rpm : 320 Rack travel in mm : 7.90...8.10

CONSTANT REGULATION

rpm : 350...460 Speed

START CUT-OUT

Speed 1/min: 240 (260)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.30

Speed rpm : 1325...1335

LOW IDLE

Speed rpm : 320 Rack travel in mm : 7.90...8.10 Del.quantity cm3/: 20.0...26.0 1000 s: (17.0...29.0)

;

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : RVI 12,0 f2 : 03.12.92 Edition : 02.91 Replaces Test oil : ISO-4113 Combination no. : 0 402 046 791 Injection pump Pump designation : PES6P120A320RS3139 EP type number : 0 412 026 718 Governor Governor design. : RQV275...950PA728-4 : 0 421 813 678 Governer no. Customer-spec. information Customer : RVI Engine : MIDR 063540 H 1st version kW : 264.0 Rated speed : 1900 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 101 assembly Openina : 207...210 pressure, bar Orifice plate diameter mm : 0,8 Test lines : 1 680 750 089 Outside diameter x Wall thickness : 8.00x2.50x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

: 3.50...3.60 Prestroke mm : (3.45...3.65) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) BASIC SETTING rpm: 600 ist speed Rack travel in mm : 13.30...13.40 Del.quantity cm3/: 21.2...21.4 100 s: (20.9...21.7) Spread cm3 : 0.5100 s: (0.9) 2nd speed rpm : 275.0 Rack travel in mm: 5.6...6.0 Del.quantity cm3/: 2.4...2.8 100 s: (2.1...3.1) Spread cm3 : 0.8100 s: (1.2) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed : 1.30...1.70 travel mm 2nd speed : 450 rpm : 3.30...3.70 travel mm 3rd speed : 800 rpm travel mm 5.60...6.00 : 950 4th speed rpm : 6.70...6.90 travel mm : 1500 5th speed rpm : 11.00...12.00 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1125 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 600 Aneroid pressure h: 1000 Del.quantity : 272.0...217.0)

per values ____

Test pressure, bar: 25...27

BEGINNING OF DELIVERY

cm3 : 5.00Spread 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 59...67

Testina:

1st rack travel in: 12.30

rpm : 1015...1025 Speed

2nd rack travel in: 4.00

rpm : 1160...1190 Speed

4th rack travel in: 1250

npm : 0.00...1.00Speed

LOW IDLE 1

Control lever

position degrees: 9...17

Testing:

: 200 Speed COM Minimum rack trave: 7.60 : 275 rom

Rack travel in mm : 5.70...5.90

CONSTANT REGULATION

rpm : 295...400 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

rpm : 500 hPa : 1000 Speed rpm Pressure

: 13.30...13.40 Rack travel mm

Measurement

Speed $1/\min : 500$

1st pressure hPa : -

Rack travel in m: 9.10...9.50

2nd pressure hPa : 200

Rack travel in m: 9.90...10.00

3rd pressure hPa : 660

Rack travel in m: 12.20...12.50

START CUT-OUT

1/min: 195 (215) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000 Speed rpm : 950

Del.quantity cm3/: 210.0...216.0 1000 s: (207.0...219.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 118.0...120.0 1000 s: (115.0...123.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.30

rpm : 1015...1025 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 150.0...180.0

1000 s: (146.0...184.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.60...6.00
Del.quantity cm3/ : 24.0...28.0

1000 s: (21.0...31.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

Start-of-delivery mark 9° cam angle

after start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : RVI 9,8 f : 21.01.93 Edition Replaces : 10.92 Test oil : ISO-4113 Combination no. : 0 402 046 798 Injection pump Pump designation : PES6P120A320RS3139 EP type number : 0 412 026 718 Governor Governor design. : RQ275/1050PA893 : 0 421 801 442 Governer no. Customer-spec. information Customer : RVI Engine : MIDR 062045 M : 236.0 1st version kW : 2100 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder assembly : 1 688 901 019 Opening | pressure, bar : 207...210 Orifice plate diameter mm : 0,8 Test lines : 1 680 750 075

pressure, bar : 207...210

Orifice plate diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness x Length mm : 8.00X2.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ______

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60 : (3.45...3.65) Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) BASIC SETTING 1st speed rpm: 600 Rack travel in mm : 11.90...12.00 Del.quantity cm3/: 22.1...22.3 100 s: (21.8...22.6) Spread cm3 : 0.5100 s: (0.9) 2nd speed rpm : 275.0
Rack travel in mm : 5.4...5.9
Del.quantity cm3/ : 2.6...3.0 100 s: (2.3...3.3) Spread cm3 : 0.8100 s: (1.2) GUIDE SLEEVE POSITION Control-lever position Degree: -2 rpm : 600 Rack travel in mm: 19.20...20.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 600 Speed Aneroid pressure h: 1000 Del.quantity : 221.0...223.0 1000 : (218.0...226.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Setting point: rpm : 600 Speed Rack travel in mm: 20.0 Testing:

1st rack travel in: 10.90

2nd rack travel in: 4.00

rpm : 1105...1120

rpm : 1200...1230 Speed

4th rack travel in: 1350

Speed rom : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed nom : 275 Rack travel in mm: 6.3

Testing:

Speed rpm : 175 Minimum rack trave: 7.10 rpm : 275 Speed

Rack travel in mm : 5.50...5.70

Rack travel in mm: 2.00 : 340...380 Speed rom

TORQUE CONTROL

Dimension a mm :-

Torque control curve - 1st version

1st speed rpm : 600

Rack travel in m: 11.30...17.50

2nd speed rpm : 1050

Rack travel in m: 11.30...11.60

Aperoid/Altitude Compensator Test

1st version Setting

Speed : 500 mom hPa : 1000 Pressure

Rack travel mm : 11.90...12.00

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 8.70...9.10

2nd pressure hPa : 360

Rack travel in m: 11.10...11.20

3rd pressure hPa : 160

Rack travel in m: 9.50...9.90

START CUT-OUT

1/min: 195 (215) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000 : 1050 Speed rom

Del.quantity cm3/: 214.0...220.0

1000 s: (211.0...223.0)

Aneroid pressure h: -: 500 Speed rpm

Del.quantity cm3/: 107.0...109.0 1000 s: (104.0...112.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.90

rpm : 1105...1120 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 135.0...165.0 1000 s: (131.0...169.0)

LOW IDLE

Speed rpm : 275

Rack travel in mm : 5.40...5.90 Del.quantity cm3/ : 26.0...30.0

1000 s: (23.0...33.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

APPLICATION

Omnibus

: 4.40...4.50 : (4.35...4.55) BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Rack travel in mm : 19.00...21.00 Note remarks Firing order : 6-2-4-1-5-3 : MB 11,7 j 2 : 31.07.92 Test sheet Edition Replaces : 08.91 Test oil : ISO-4113 Phasina : 0-60-120-180-240-300 : 0 402 046 825 Combination no. Tolerance + - ° : 0.50 (0.75) Injection pump Time to cyl. no. : 6 Pump designation : PES6P110A720LS3282 EP type number : 0 412 016 736 BASIC SETTING Governor Governor design. : RQ300/1100PA800-2 1st speed rpm: 1100 : 0 421 801 593 Governer no. Rack travel in mm : 13.10...13.20 Customer-spec, information Customer : MERCEDES-BENZ Del.quantity cm3/: 13.6...13.8 Engine : 0M447 h 100 s: (13.3...14.0) 1st version kW : 157.0 Spread cm3 : 0.4: 2200 Rated speed 100 s: (0.8) TEST BENCH REQUIREMENTS rpm : 300.02nd speed Test oil Rack travel in mm: 9.0...9.3 inlet temp. °C : 38...42 Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.3) cm3 : 0.4Overflow valve Spread : 1 417 413 025 100 s: (0.8) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Overflow Degree: -1 quantity min. 1/h: 100...120 rpm : 600 Rack travel in mm : 13.50...14.50 Test nozzle holder assembly : 0 681 343 009 FULL LOAD DELIV. AT FULL LOAD STOP Opening . 1st version pressure, bar : 172...175 Speed rpm : 1100 Del.quantity : 136.0...138.0 1000 : (133.5...140.5) Test Lines : 1 680 750 015 : 4.00 Spread cm3 1000 : (8.00)Outside diameter x Wall thickness RATED SPEED : 6.00x1.50x600 x Length mm 1st version (A) Injection pump setting values Insp. values in parentheses Setting point: Set equal delivery quant. Speed rpm per values Rack travel in mm : 14.0 BEGINNING OF DELIVERY Testina:

1st rack travel in: 12.10

Speed

rpm : 1140...1150

Test pressure, bar: 25...27

2nd rack travel in: 4.00

Speed rpm : 1190...1220 4th rack travel in: 1250 Speed rpm : 0.00...2.40

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm : 7.3

Testing:

rpm : 200 Speed Minimum rack trave: 8.80

Speed rpm : 300 Rack travel in mm : 7.20...7.40

Rack travel in mm: 2.00

Speed rpm : 370...410

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 600 Speed

Del.quantity cm3/: 113.0...116.0 1000 s: (110.0...119.0)

Spread cm3 : 5.00

1000 s: (9.00)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.10

Speed rpm : 1140...1150

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB 11,7 j-3 Edition : 31.07.92 Replaces : 08.91 Test oil : ISO-4113 : 0 402 046 826 Combination no. Injection pump Pump designation : PES6P110A720LS3282 EP type number : 0 412 016 736 Governor Governor design. : RQ300/1100PA786-2 : 0 421 801 576 Governer no. Customer-spec. information Customer : MERCEDES-BENZ Engine : 0M447 h 1st version kW : 157.0 Rated speed : 2200 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Overflow quantity min. 1/h: 100...120 Test nozzle holder : 0 681 343 009 assembly Opening 0 pressure, bar : 172...175 Test lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00X1.50X600 (A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50 : (4.35...4.55) Rack travel in mm : 19.00...21.00 Firing order : 6-2-4-1-5-3 Phasina : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 6 BASIC SETTING 1st speed rpm: 1100 Rack travel in mm : 13.00...13.10 Del.quantity cm3/: 13.6...13.8 100 s: (13.3...14.0) cm3 : 0.4Spread 100 s: (0.8) 2nd speed rpm : 300.0 Rack travel in mm : 9.0...9.3 Del.quantity cm3/ : 1.4...2.0 100 s: (1.1...2.3) Spread cm3 : 0.4100 s: (0.8) GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 600 Speed Rack travel in mm : 13.50...14.50 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1100 Del.quantity : 136.0...138.0 1000 : (133.5...140.5) Spread : 4.00 cm3 1000 : (8.00) RATED SPEED 1st version Setting point: rpm : 600 Speed Rack travel in mm: 14.0

Testina:

Speed

1st rack travel in: 12.00

rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1190...1220 4th rack travel in: 1250

Speed rpm : 0.00...2.40

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm : 7.3

Testing:

Speed rpm : 200 Minimum rack trave: 8.80 Speed rpm : 300
Rack travel in mm : 7.20...7.40
Rack travel in mm : 2.00

Speed rpm : 370...410

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600 Del.quantity cm3/: 113.0...116.0

1000 s: (110.0...119.0)

cm3 : 5.00 Spread 1000 s: (9.00)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.00

Speed rpm : 1140...1150

Remarks:

Note remarks

Test sheet : RVI 9,8 q : 23.10.92 Edition : 08.92 Replaces Test oil : ISO-4113

Combination no. : 0 402 046 827

Injection pump

Pump designation : PES6P120A320RS3284

EP type number : 0 412 026 749

Governor

Governor design. : RQ275/1050PA999-3 Governer no. : 0 421 801 598

Customer-spec. information Customer : RV1

: MIDR/PR 062045 Engine

1st version kW : 186.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

: 1 680 750 089 Test lines

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 10.10...10.20

Del.quantity cm3/: 14.8...15.0

100 s: (14.5...15.3)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 275.02nd speed Rack travel in mm : 4.6...5.0 Del.quantity cm3/ : 1.9...2.3

100 s: (1.6.,.2.6)

cm3 : 0.8 Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 1000

: 148.0...150.0 1000 : (145.0...153.0) Del.quantity

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

rpm Rack travel in mm: 20.0

Testina:

1st rack travel in: 9.10

rpm : 1130...1145 Speed

2nd rack travel in: 4.00

rpm : 1200...1230 Speed 4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed : 275 COM Rack travel in mm: 5.3

Testing:

rpm Speed : 200 Minimum rack trave: 6.30

Speed rpm : 275
Rack travel in mm : 4.70...4.90

Rack travel in mm: 2.00 Speed : 320...360 MOM

TORQUE CONTROL

Dimension a mm : --

Torque control curve - 1st version

1st speed rpm : 700

Rack travel in m: 10.50...10.60 2nd speed rpm : 1050

Rack travel in m: 10.40...10.60

Aneroid/Altitude Compensator Test

1st version

Settina

Speed : 500 mqn Pressure hPa : 1000

Rack travel mm : 10.10...10.20

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 8.00...8.10

2nd pressure hPa : 200

Rack travel in m: 8.50...8.60

3rd pressure hPa : 360

Rack travel in m: 9.40...9.80

START CUT-OUT

Speed 1/min: 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000 : 1050 Speed rpm

Del.quantity cm3/: 146.0...152.0

1000 s: (143.0...155.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 79.0...81.0

1000 s: (76.0...84.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.10

Speed rpm : 1130...1145

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 155.0...185.0

1000 s: (151.0...189.0)

LOW IDLE

Speed rpm : 275

Rack travel in mm : 4.60...5.00 Del.quantity cm3/: 19.0...23.0

1000 s: (16.0...26.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

Note remarks

Test sheet : SAK

Edition : 26.06.92

Replaces

Test oil : ISO-4113

Combination no. : 0 402 046 834

Injection pump

Pump designation : PES6P130A320RS3299

: 0 412 036 706 EP type number

Governor

Governor design. : RQV450...1500PA1023

Governer no. : 0 421 813 985

Customer-spec. information Customer : SEATEK

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Openina |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2,50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 6.00...6.10 : (5.95...6.15) Prestroke mm

Rack travel in mm : 10.00...11.00

Firing order : 1-5-3-6-2Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1500

Rack travel in mm : 10.70...10.80

Del.quantity cm3/: 27.3...27.6

100 s: (27.3...27.6)

Spread cm3 : 0.6

100 s: (1.0)

rpm : 450.02nd speed Rack travel in mm : 3.2...3.6 Del.quantity cm3/ : 2.5...3.3

100 s: (2.1...3.5)

Spread cm3 : 1.0100 s: (1.4)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1500 1st speed

travel mm : 8.10...8.30

2nd speed rpm : 450

travel mm : 0.80...1.20

3rd speed rpm : 700

: 2.80...3.40 travel mm

rpm : 1050 4th speed

: 4.60...5.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1700 Rack travel in mm : 7.70...10.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1500 Speed Aneroid pressure h: 900

Del.quantity : 273.0...276.0

1000 : (273.0...276.0)

Spread cm3 : 6.00

1000 : (10.00)

RATED SPEED

1st version

Control lever position degrees: 100...108 Testing: 1st rack travel in: 9.70 rpm : 1540...1550 Speed 2nd rack travel in: 4.00 Speed rpm : 1640...1670 4th rack travel in: 1750 rpm : 0.09...1.00 Speed LOW IDLE 1 Control Lever position degrees: 65...73 Testina: Speed rpm : 100 Minimum rack trave: 4.90 rpm : 450 Speed Rack travel in mm : 3.30...3.50 CONSTANT REGULATION rpm : 450...550 Speed Aneroid/Altitude Compensator Test 1st version Settina : 700 Speed rpm Pressure hPa : 900 Rack travel mm : 10.70...10.80 Measurement 1/min: 700 Speed 1st pressure hPa : -Rack travel in m: 7.00...7.20 2nd pressure hPa : 450 Rack travel in m: 8.70...8.80 3rd pressure hPa : 390 Rack travel in m: 7.90...3.10 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: rpm : 700 Speed Del.quantity cm3/: 157.0...160.0 1000 s: (153.5...163.5) BREAKAWAY

Speed rpm : 1540...1550

Remarks: :
APPLICATION

Navy

J25

1st version

1mm rack travel less than

full load rack tr: 9.70

Note remarks

Test sheet : IHC

: 15.06.93 Edition : 02.93 Replaces Test oil : ISO-4113

Combination no. : 0 402 046 839

Injection pump

Pump designation : PES6P100A320LS3306

EP type number : 0 412 006 703

Governor

: RQV350...1200PA1042 Governor design.

-1K

Governer no. : 0 421 815 322

Customer—spec. information Customer : NAVISTAR

Engine : DTA-466

1st version kW : 172.0 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 058

Inlet press., bar: 2.80

Overflow

quantity min. 1/h: 240...260

Test nozzle holder

assembly : 1 688 901 101

Opening |

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 2.95...3.05

: (2.90...3.10) Rack travel in mm : 14.00...17.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 800

Rack travel in mm : 13.90...14.00

Del.quantity cm3/: 15.5...15.7

100 s: (15.3...15.9)

Spread cm3 : 0.8

100 s: (1.2)

2nd speed rpm : 350.0

Rack travel in mm: 5.9...6.1 Del.quantity cm3/: 1.5...1.9

100 s: (1.3...2.2)

Spread cm3 : 0.4100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st sp∈ed rpm : 350

travel mm : 1.80...2.00

2nd speed 500 rpm

travel mm : 3.50...3.90

3rd speed : 800 rpm

travel mm : 6.20...6.60

4th speed rpm : 1250

travel mm : 9.30...9.50

5th speed rpm : 1400

travel mm : 10.50...11.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1440

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rom : 800 Aneroid pressure h: 1200 Del.quantity : 155.5...157.5 1000 : (153.5...159.5) Spread cm3 : 8.00 1000 : (12.00) RATED SPEED 1st version Control lever position degrees: 116...124 Testing: 1st rack travel in: 13.30 rpm : 1240...1270 Speed 2nd rack travel in: 4.00 Speed rpm: 1415...1425 4th rack travel in: 1550 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 74...82 Testing: Speed rpm : 275 Minimum rack trave: 7.70 Speed : 350 Speed rpm Rack travel in mm : 5.90...6.10 CONSTANT REGULATION Speed rpm : 350...520 TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version rpm : 800 1st speed Rack travel in m: 13.90...14.00 rpm : 1200 2nd speed Rack travel in m: 14.10...14.30 3rd speed rpm : 650 Rack travel in m: 13.30...13.70 Aneroid/Altitude Compensator Test 1st version Setting Speed : 1200 rpm hPa : 1200 Pressure : 14.10...14.30 Rack travel mm Measurement 1/min: 1200 Speed

Rack travel in m: 10.30...10.70 2nd pressure hPa : 310 Rack travel in m: 11.20...11.30 3rd pressure hPa : 655 Rack travel in m: 13.00...13.40 START CUT-OUT 1/min: 280 (290) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 rpm : 1200 Speed Del.quantity cm3/: 162.5...166.5 1000 s: (160.5...168.5) Spread cm3: 8.00 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 800 Del.quantity cm3/: 70.5...74.5 1000 s: (68.5...76.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 13.30 rpm : 1240...1270 Speed STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 120.0...160.0 1000 s: (115.0...165.0) Rack travel in mm : 20.00...21.00 LOW IDLE Speed rpm : 350
Rack travel in mm : 5.90...6.10
Del.quantity cm3/ : 15.5...19.5
1000 s: (13.0...22.0) cm3 : 4.00Spread 1000 s: (6.50) Remarks: : NAVISTAR #1819914c91 Bow dimension: Stiding-sleeve position = 37.0 mm Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

1st pressure hPa : -

Delivery-valve spring pre-tension = 6.30...6.40 mm.
Permissible alteration from 6.00...6.70 mm

Note remarks

Test sheet

: IHC

Edition

: 15.06.93

Replaces

: 04.93

Test oil

: ISO-4113

Combination no.

: 0 402 046 841

Injection pump

Pump designation : PES6P100A320LS3309

EP type number

: 0 412 006 704

Governor

Governor design.

: RQV350...1300PA1042

-4K

Governer no.

: 0 421 815 328

Customer

Customer-spec. information : NAVISTAR

Engine

: DTA-408

1st version kW

: 171.0

Rated speed

: 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 058

Inlet press., bar: 2.80

Overflow

quantity min. 1/h: 175...195

Test nozzle holder

assembly

: 1 688 901 101

Openina

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,6

Test lines

: 1 680 750 015

Outside diameter

x Wall thickness

x Length mm

: 6.00x3.00x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm

: 2.95...3.05 : (2.90...3.10)

Rack travel in mm : 14.00...17.00

Firing order

: 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 900

Rack travel in mm : 12.50...12.60

Del.quantity cm3/: 14.4...14.6

Spread

cm3 : 0.8

100 s: (1.2)

rpm : 350.0

100 s: (14.2...14.8)

2nd speed Rack travel in mm: 5.1...5.3

Del.quantity cm3/: 1.4...1.8

100 s: (1.2...2.1)

Spread

cm3 : 0.4

100 s: (0.6)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 350 1st speed

: 1.60...2.00 travel mm

2nd speed rpm : 500

: 3.80...4.20 travel mm

rpm : 800 3rd speed

travel mm : 5.80...6.20

rpm : 13004th speed

: 8.90...9.10 travel mm

rpm : 1500 5th speed

travel mm

: 10.40...10.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rom : 900

Aneroid pressure h: 1200

Del.quantity

: 144.5...146.5

1000 : (142.5...148.5)

Spread cm3: 8.00 1000 : (12.00)RATED SPEED 1st version Control Lever position degrees: 61...69 Testing: 1st rack travel in: 11.90 rpm : 1340...1370 Speed 2nd rack travel in: 4.00 rpm : 1510...1520 Speed 4th rack travel in: 1650 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 16...24 Testing: Speed rom : 275 Minimum rack trave: 6.50 : 350 rpm Rack travel in mm : 5.10...5.30 CONSTANT REGULATION rom : 350...520 Speed TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version rpm : 900 1st speed Rack travel in m: 12.50...12.60 2nd speed rpm : 1300 Rack travel in m: 12.90...13.10 3rd speed rpm : 700 Rack travel in m: 11.80...12.20 Aneroid/Altitude Compensator Test 1st version Setting Speed : 1300 rom hPa : 1200 Pressure : 12.90...13.10 Rack travel mm Measurement 1/min: 1300 Speed

START CUT-OUT 1/min: 280 (290) Speed FUEL DELIVERY CHARACTERISTICS 1st version Ameroid pressure h: 1200 rpm : 1300 Speed Del.quantity cm3/: 147.5...151.5 1000 s: (145.5...153.5) Spread cm3: 8.00 1000 s: (12.0) Aneroid pressure h: rpm : 900 Speed Del.quantity cm3/: 75.5...79.5 1000 s: (73.5...81.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.90 rpm : 1340...1370 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 120.0...160.0 1000 s: (115.0...165.0) Rack travel in mm : 20.00...21.00 LOW IDLE Speed : 350 rpm Rack travel in mm : 5.10...5.30 Del.quantity cm3/: 14.5...18.5 1000 s: (12.0...21.0) cm3 : 4.00Spread 1000 s: (6.50) Remarks: : NAVISTAR #1819917C91 Limit shutoff stop screw to 1.0 mm. Bow dimension: Sliding-sleeve position = 37.0 mm Setting and blocking of pointer of

start-of-delivery sensor on cyl. 1

start of delivery

1st pressure hPa : -

3rd pressure hPa : 670

Rack travel in m: 9.30...9.70 2nd pressure hPa : 300 Rack travel in m: 10.50...10.60

Rack travel in m: 11.80...12.20

Note remarks

Test sheet : NAV Edition

: 15.06.93 Replaces : 04.93 Test oil : ISO-4113

Combination no. : 0 402 046 842

Injection pump

Pump designation : PES6P100A320LS3309

EP type number : 0 412 006 704

Governor

: RQV350...1300PA1042 Governor design.

-5K

: 0 421 815 329 Governer no.

Customer-spec. information Customer : NAVISTAR

Engine : DTA-408

1st version kW : 156.5 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 058

Inlet press., bar: 2.80

Overflow

quantity min. 1/h: 240...260

Test nozzle holder

: 1 688 901 101 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x3.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

: 2.95...3.05 Prestroke mm

: (2.90...3.10)

Rack travel in mm : 14.00...15.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no.

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 12.40...12.50

Del.quantity cm3/: 14.3...14.5

100 s: (14.1...14.7)

cm3 : 0.8Spread

100 s: (1.2)

rpm : 350.02nd speed Rack travel in mm: 5.1...5.3

Del.quantity cm3/ : 1.4...1.8 100 s: (1.2...2.1)

cm3 : 0.4Spread 100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

: 1.60...2.00 travel mm

2nd speed 500 rom

: 3.80...4.20 travel mm

3rd speed : 800 rpm

: 5.80...6.20 travel mm

4th speed rpm : 1300

: 8.90...9.10 travel mm

5th speed : 1500 rpm

travel mm : 10.40...10.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900 Aneroid pressure h: 1200

Del.quantity : 143.5...145.5

1000 : (141.5...147.5)

Spread cm3 : 8.00 1000 : (12.00) RATED SPEED 1st version Control lever position degrees: 59...67 Testing: 1st rack travel in: 11.80 Speed rpm : 1340...1370 2nd rack travel in: 4.00 Speed rpm : 1510...1520 4th rack travel in: 1650 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 16...24 Testing: Speed rpm : 275 Minimum rack trave: 6.00 rpm Rack travel in mm : 5.10...5.30 CONSTANT REGULATION rpm : 350...520 Speed TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 900 Rack travel in m: 12.40...12.50 rpm : 1300 2rvd speed Rack travel in m: 12.80...13.00 3rd speed rpm : 700 Rack travel in m: 11.80...12.20 Aneroid/Altitude Compensator Test 1st version Setting Speed : 1300 rpm Pressure hPa : 1200 : 12.80...13.00 Rack travel mm Measurement 1/min: 1300 Speed 1st pressure hPa : -Rack travel in m: 9.30...9.70 2nd pressure hPa : 290 Rack travel in m: 10.40...10.50 3rd pressure hPa : 700

Rack travel in m: 11.80...12.20

START CUT-OUT 1/min: 280 (290) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 rpm : 1300 Speed Del.quantity cm3/: 149.0...153.0 1000 s: (147.0...155.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: rpm : 900 Speed Del.quantity cm3/: 75.5...79.5 1000 s: (73.5...81.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.80 rpm : 1340...1370 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 120.0...160.0 1000 s: (115.0...165.0) Rack travel in mm : 20.00...21.00 LOW IDLE Speed rpm : 350
Rack travel in mm : 5.10...5.30
Del.quantity cm3/: 14.5...18.5 1000 s: (12.0...21.0) cm3 : 4.00Spread 1000 s: (6.50) Remarks: : NAVISTAR #1819918C91 Limit shutoff stop screw to 1.0 mm. Bow dimension: Sliding-sleeve position = 37.0 mmSetting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery Delivery-valve spring pre-tension = 6.30...6.40 mm.

Permissible alteration from 6.00...6.70

Note remarks

Test sheet

: IHC

Edition

: 15.06.93

Replaces

: 02.93

Test oil

: ISO-4113

Combination no. : 0 402 046 845

Injection pump

Pump designation : PES6P100A320LS3309

EP type number

: 0 412 006 704

Governor

Governor design.

: RQV350...1300PA1042

-6K

Governer no.

: 0 421 815 330

Customer

Customer-spec. information : NAVISTAR

Engine

: DTA-408

1st version kW

: 142.0

Rated speed

: 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 058

Inlet press., bar: 2.80

Overflow

quantity min. 1/h: 240...260

Test nozzle holder

assembly

: 1 688 901 101

Opening |

pressure, bar

Orifice plate

diameter mm

: 0,6

: 207...210

Test lines

: 1 680 750 015

Outside diameter

x Wall thickness

x Length mm

: 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm

: 2.95...3.05

: (2.90...3.10)

Rack travel in mm : 14.00...17.00

Firing order

: 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 900

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 13.2...13.4

100 s: (13.0...13.6)

Spread

2nd speed

Spread

cm3 : 0.8

100 s: (1.2)

rpm : 350.0

Rack travel in mm: 5.1...5.3

Del.quantity cm3/: 1.4...1.8

100 s: (1.2...2.1)

cm3 : 0.4100 s: (0.6)

(B) Setting of injection pump

GUIDE SLEEVE TRAVEL

with governor

1st speed rpm : 350

: 1.60...2.00

travel mm 2nd speed

rpm : 500 : 3.80...4.20

travel mm 3rd speed

rpm : 800

travel mm

: 5.80...6.20

4th speed

rpm : 1300

travel mm

Speed

: 8.90...9.10

rpm : 1500 5th speed

travel mm

: 10.40...10.80

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1500

Rack travel in mm : 8.00...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

K06

1st version rpm : 900 Speed Aneroid pressure h: 1200 : 132.5...134.5 1000 : (130.5...136.5) Del.quantity : 8.00 Spread cm3 1000 : (12.00) RATED SPEED 1st version Control lever position degrees: 112...120 Testing: 1st rack travel in: 11.40 rpm : 1340...1370 Speed 2nd rack travel in: 4.00 rpm : 1500...1510 Speed 4th rack travel in: 1650 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 71...79 Testing: Speed rpm : 275 Minimum rack trave: 6.70 rpm : 350 Rack travel in mm : 5.10...5.30 CONSTANT REGULATION Speed rpm : 350...520 TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version rpm : 900 1st speed Rack travel in m: 12.10...12.20 od speed rpm : 1300 2nd speed Rack travel in m: 12.40...12.60 3rd speed : 700 rom Rack travel in m: 11.40...11.80 Aneroid/Altitude Compensator Test 1st version Setting Speed : 1300 man hPa : 1200 Pressure : 12.40...12.60 Rack travel mm

1/min: 1300

Rack travel in m: 9.40...9.80 2nd pressure hPa : 250 Rack travel in m: 10.30...10.40 3rd pressure hPa ി Rack travel in n .60...12.00 START CUT-OUT Speed 1/min : 280 (290) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 rpm : 1300 Speed Del.quantity cm3/: 139.0...143.0 1000 s: (137.0...145.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: rpm : 900 Speed Del.quantity cm3/: 76.5...80.5 1000 s: (74.5...82.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.40 rpm : 1340...1370 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 120.0...160.0 1000 s: (115.0...165.0) Rack travel in mm : 20.00...21.00 LOW IDLE Speed rpm : 350 Rack travel in mm : 5.10...5.30 Del.quantity cm3/ : 14.5...18.5 1000 s: (12.0...21.0) cm3 : 4.00Spread 1000 s: (6.50) Remarks: : NAVISTAR #1819922C91 Bow dimension: Sliding-sleeve position = 37.0 mm Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

Measurement

1st pressure hPa : -

Speed

Delivery-valve spring pre-tension = 6.30...6.40 mm.
Permissible alteration from 6.00...6.70 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS : 2.75...2.85 : (2.70...2.90) Prestroke mm Note remarks Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 : DEE Test sheet : 15.06.93 Edition : 04.93 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 402 076 059 Tolerance + - ° : 0.50 (0.75) Injection pump Time to cyl. no. : 1 Pump designation : PES6P110A720RS370 EP type number : 0 412 016 052 BASIC SETTING Governor Governor design. : RSV500...900P0A455-5 1st speed rpm: 900 Governer no. : 0 421 833 400 Rack travel in mm : 10.20...10.30 Customer-spec, information Customer : JOHN DEERE Del.quantity cm3/: 12.3...12.5 Engine : 6619T F01 100 s: (12.1...12.7) : 200.0 1st version kW Spread cm3 : 0.4: 1800 Rated speed 100 s: (0.6) TEST BENCH REQUIREMENTS rpm : 500.0 2nd speed Test oil Rack travel in mm: 5.6...5.8 inlet temp. °C : 38...42 Del.quantity cm3/: 1.5...1.9 100 s: (1.3...2.2) Overflow valve cm3 : 0.6Spread : 1 457 413 010 100 s: (0.8) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -3 assembly : 1 688 901 101 rpm : 800 Speed Rack travel in mm : 0.30...0.70 Opening. pressure, bar : 207...210 Governor spring pre-tension Click setting x :? Orifice plate diameter mm : 0,6 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Test lines : 1 680 750 015 Speed rpm : 900 : 123.5...125.5 Del.quantity 1000 : (121.5...127.5) Outside diameter x Wall thickness Spread cm3 : 4.00 x Length mm : 6.00x3.00x600 1000 : (6.50) (A) Injection pump setting values RATED SPEED Insp. values in parentheses Set equal delivery quant. 1st version per values ___ Control lever position degrees: 44...52 BEGINNING OF DELIVERY Test pressure, bar: 27...29 Testing:

1st rack travel in: 9.20

rpm : 945...955 Speed 2nd rack travel in: 4.00

Speed rpm : 1040...1050

3rd rack travel in: 4.00

rpm : 1045...1075 Speed

4th rack travel in: 1200

: 0.30...1.40 Speed rom

LOW IDLE 1 Control Lever

position degrees: 30...38

Setting point w/out bumper spring

rpm : 500 Rack travel in mm: 5.2

Testing:

Speed : 100 rpm Minimum rack trave: 19.00 rpm : 500

Rack travel in mm : 5.60...5.80

TORQUE CONTROL

Torque control curve - 1st version

rpm : 900 1st speed

Rack travel in m: 10.20...10.30

2nd speed rpm : 650

Rack travel in m: 10.80...11.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed : 650 rpm

Del.quantity cm3/: 138.5...142.5

1000 s: (136.5...144.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.20

rpm : 945...955 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 180.0...200.0

1000 s: (175.0...205.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 500

Rack travel in mm : 5.60...5.80 Del.quantity cm3/: 15.5...19.5 1000 s: (13.0...22.0)

Spread

cm3 : 6.00

1000 s: (8.00)

Remarks:

: JOHN DEERE # AR88760

Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mark is at 15° angular displacement of the cam after start of delivery at cylinder 1 with control-rod travel 9.00...12.00 mm

Note remarks

Test sheet

: DEE

Edition Replaces

: 15.06.93 : 01.93

Test oil

: ISO-4113

Combination no.

: 0 402 076 745

Injection pump

Pump designation : PES6P120A720RS3203

EP type number

: 0 412 026 728

Governor

Governor design.

: RSV625...1100P2A534

-9

Governer no.

: 0 421 833 372

Customer—spec. information

Customer

: JOHN DEERE

Engine

: 6076 HZ 031

1st version kW

: 205.0

Rated speed

: 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 1 688 901 101

Opening

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,6

Test lines

: 1 680 750 015

Outside diameter

x Wall thickness

x Length mm

: 6.00X3.00X600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm

: 3.55...3.65

: (3.50...3.70)

Rack travel in mm : 9.00...12.00 Firing order

: 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm : 1100

Rack travel in mm : 12.70...12.80

Del.guantity cm3/: 17.4...17.6

100 s: (17.2...17.8)

Spread

cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 625.0

Rack travel in mm : 5.4...5.6 Del.quantity cm3/ : 2.7...3.1

100 s: (2.4...3.3)

cm3 : 0.6 Spread

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Spread

rpm : 1100

Aneroid pressure h: 1200

Del.quantity

: 174.5...176.5 1000 : (172.5...178.5)

cm3

: 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 42...50

Testing: 1st rack travel in: 11.70 Speed rpm : 1140...1150 2nd rack travel in: 4.00 Speed rpm : 1205...1215 3rd rack travel in: 4.00 Speed rpm : 1195...1225 4th rack travel in: 1350 Speed rpm : 0.30...1.40LOW IDLE 1 Control lever position degrees: 22...30 Setting point w/out bumper spring rpm : 625 Rack travel in mm: 5.0 Testing: Speed : 100 rpm Minimum rack trave: 19.00 : 625 rpm Rack travel in mm : 5.40...5.60 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 12.70...12.80 2nd speed rpm : 700 Rack travel in m: 13.30...13.50 Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 500 hPa : 1200 rpm Pressure : 13.30...13.50 Rack travel mm Measurement Speed $1/\min : 500$ 1st pressure hPa : -Rack travel in m: 11.60...11.80 2nd pressure hPa : 645 Rack travel in m: 12.10...12.20 3rd pressure hPa : 840 Rack travel in m: 12.90...13.30 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 Speed rpm : 700

Del.quantity cm3/: 187.0...191.0

Aneroid pressure h: -

rom

1000 s: (185.0...193.0)

Del.quantity cm3/: 143.0...147.0 1000 s: (141.0...149.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.70 Speed rpm : 1140...1150 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 90.0...110.0 1000 s: (85.0...115.0) Rack travel in mm : 20.00...21.00 LOW IDLE Speed rpm : 625 Rack travel in mm : 5.40...5.60 Del.quantity cm3/ : 27.0...31.0 1000 s: (24.5...33.5) Spread Remarks:

cylinder 1

cm3 : 6.00 1000 s: (8.00) : JOHN DEERE # RE47399 Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer. Starting/full-load transition speed from holding magnet = 450 1/min. Start-cf-delivery mark at 10° cam

rotation angle after start of delivery,

Speed

Note remarks

Test sheet : DEE

: 15.06.93 Edition Replaces : 01.93 Test oil : ISO-4113

Combination no. : 0 402 076 754

Injection pump

Pump designation : PES6P120A720RS3203

EP type number : 0 412 026 728

Governor

: RSV400...1100P2A534 Governor design.

-14

: 0 421 833 405 Governer no.

Customer-spec. information Customer : JOHN DEERE

Engine : 6076 HF030

1st version kW : 205.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 101

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x3.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65 : (3.50...3.70)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 12.50...12.60

Del.quantity cm3/: 16.8...17.0

100 s: (16.6...17.2)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 400.0 Rack travel in mm : 5.2...5.4 Del.quantity cm3/ : 2.0...2.4

100 s: (1.8...2.6)

cm3 : 0.6Spread

100 s: (0.8)

GUIDE SLEEVE POSITION Control-Lever position

Degree: -3

rpm : 800 Speed Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 1200

Del.quantity : 700.0....72.0)

cm3 : 4.00Spread

1000 : (6.50)

RATED SPEED

1st version

Control Lever

position degrees: 36...44

Testing:

1st rack travel in: 11.50

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

rpm : 1185...1195 Speed

3rd rack travel in: 4.00

Speed rpm : 1185...1215 4th rack travel in: 1300

rpm : 0.30...1.40Speed

LOW IDLE 1

Control lever

position degrees: 12...20

Setting point w/out bumper spring

rrom : 400 Rack travel in mm: 4.8

Testina:

Speed : 100 rpm

Minimum rack trave: 19.00

rpm : 400 Speed

Rack travel in mm : 5.20...5.40

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 12.50...12.60 2nd speed rpm : 750

Rack travel in m: 12.90...13.10

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 man hPa : 1200 Pressure

Rack travel mm : 12.90...13.10

Measurement

Speed $1/\min : 500$

1st pressure hPa : -

Rack travel in m: 10.50...10.70 2nd pressure hPa : 560 Rack travel in m: 11.10...11.20

3rd pressure hPa : 770

Rack travel in m: 12.20...12.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

rpm : 750 Speed

Del.quantity cm3/ : 174.5...178.5

1000 s: (172.5...180.5)

Aneroid pressure h: -

Speed : 800 rpm

Del.quantity cm3/: 117.5...121.5

1000 s: (114.5...124.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

: 100 Speed CDM

Del.quantity cm3/: 90.0...110.0 1000 s: (85.0...115.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400

Rack travel in mm : 5.20...5.40 Del.quantity cm3/: 20.0...24.0 1000 s: (18.0...26.0)

Spread cm3 : 6.001000 s: (8.00)

Remarks:

: JOHN DEERE # RE47410

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Starting/full-load transition speed from holding magnet = 450 1/min.

Start-cf-delivery mark at 10° cam rotation angle after start of delivery, cylinder 1

Test sheet

Note remarks

: NAV

Edition Replaces

: 15.06.93 : 04.93

Test oil

: ISO-4113

Combination no.

: 0 402 076 755

Injection pump

Pump designation : PES6P110A320LS3318

EP type number

: 0 412 016 741

Governor

Governor design. : RSV350...750P4A561

Governer no.

: 0 421 833 406

Customer

Customer-spec. information : NAVISTAR

Engine

: DTA-466

1st version kW

: 185.0

Rated speed

: 1500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 058

Inlet press., bar: 2.80

Overflow

quantity min. 1/h: 175...195

Test nozzle holder

assembly

: 1 688 901 101

Opening |

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,6

Test lines

: 1 680 750 015

Outside diameter

x Wall thickness

x Length mm

: 6.00x3.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm

: 2.95...3.05

: (2.90...3.10)

Rack travel in mm : 9.00...12.00

Firing order

: 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 700

Rack travel in mm : 12.50...12.60

Del.guantity cm3/: 20.8...21.0

100 s: (20.6...21.2)

Spread

cm3 : 0.8

100 s: (1.2)

2nd speed

rpm : 350.0

Rack travel in mm: 5.5...5.7

bel.quantity cm3/ : 3.8...4.2 100 s: (3.5...4.4)

Spread

Speed

cm3 : 0.4

100 s: (0.6)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 700

Del.quantity

: 208.5...210.5

1000

: (206.5...212.5)

cm3

: 8.00

Spread

1000 : (12.00)

RATED SPEED

1st version

Control lever

position degrees: 38...46

Testina: 1st rack travel in: 11.50 Speed rpm : 765...775 2nd rack travel in: 4.00 rpm : 800...810 Speed 3rd rack travel in: 4.00 rpm : 805...815 Speed 4th rack travel in: 900 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 18...26 Setting point w/out bumper spring rpm : 350 Rack travel in mm: 5.6 Testing: Speed rpm : 100 Minimum rack trave: 19.00 rpm Speed : 350 Rack travel in mm : 5.50...5.70 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.50 Speed rpm : 765...775 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 135.0...175.0 1000 s: (130.0...180.0) Rack travel in mm : 20.00...21.00 LOW IDLE Speed rpm : 350 Rack travel in mm : 5.50...5.70 Del.quantity cm3/ : 38.0...42.0 1000 s: (35.5...44.5) Spread cm3 : 4.001000 s: (6.50) Remarks:

: NAVISTAR #1820271C91

APPLICATION

Generator

Note remarks

Test sheet

: NAV

Edition

: 15.06.93

Replaces

: 04.93

Test oil

: ISO-4113

Combination no.

: 0 402 076 755A

Injection pump

Pump designation : PES6P110A320LS3318

EP type number

: 0 412 016 741

Governor

Governor design.: RSV350...750P4A561

Governer no.

: 0 421 833 406

Cust. part no.

: 1820271091A

Customer-spec. information

Customer

: NAVISTAR

Engine

: DTA-466

1st version kW

: 208.0

Rated speed

: 1500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 058

Inlet press., bar: 2.80

Overflow

quantity min. 1/h: 175...195

Test nozzle holder

assembly

: 1 688 901 101

Opening

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,6

Test lines

: 1 680 750 015

Outside diameter

x Wall thickness

x Length mm

: 6.00x3.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm

: 2.95...3.05

: (2.90...3.10)

Rack travel in mm : 9.00...12.00

Firing order : 1-5- 3- 6- 2- 4

Phasina

: 0-60-120-180-240-300

Tolerance + - *

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 850

Rack travel in mm : 12.50...12.60

Del.guantity cm3/: 20.4...20.6

100 s: (20.2...20.8)

Spread

cm3 : 0.8

100 s: (1.2)

2nd speed

rpm : 350.0

Rack travel in mm: 5.5...5.7

Del.quantity cm3/: 3.8...4.2

100 s: (3.5...4.4)

Spread

Speed

cm3 : 0.4

100 s: (0.6)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 850

Del.quantity

: 204.5...206.5

cm3

1000 : (202.5...208.5)

Spread

: 8.00

1000 : (12.00)

RATED SPEED 1st version Control Lever position degrees: 45...53 Testina: 1st rack travel in: 11.50 rpm : 915...925 Speed 2nd rack travel in: 4.00 Speed rpm : 940...950 3rd rack travel in: 4.00 rpm : 945...955 Speed 4th rack travel in: 1050 rpm : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 18...26 Setting point w/out bumper spring rpm : 350 Rack travel in mm: 5.6 Testina: Speed rpm : 100 Minimum rack trave: 19.00 rpm : 350 Speed Rack travel in mm : 5.50...5.70 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.50 rpm : 915...925 Speed STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 135.0...175.0 1000 s: (130.0...180.0) Rack travel in mm : 20.00...21.00 LOW IDLE Speed : 350 rpm Rack travel in mm : 5.50...5.70 Del.quantity cm3/: 38.0...42.0 1000 s: (35.5...44.5) Spread cm3 : 4.001000 s: (6.50) **APPLICATION** Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : NAV Edition : 15.06.93 Replaces : 04.93 Test oil : ISO-4113 Combination no. : 0 402 076 756 Phasing Injection pump Pump designation : PES6P100A320LS3317 : 0 412 006 706 EP type number Governor Governor design. : RSV350...1200P2A562 : 0 421 833 407 Governer no. Customer-spec. information Customer : NAVISTAR : DTA-466 Engine 1st version kW : 204.0 Rated speed : 2400 TEST BENCH REQUIREMENTS Spread Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 058 Inlet press., bar : 2.80 Spread quantity min. 1/h: 175...195 Test nozzle holder assembly : 1 688 901 101 Speed **Opening** : 207...210 pressure, bar Orifice plate diameter mm : 0,6 Test lines : 1 680 750 015 Speed Outside diameter x Wall thickness x Length mm : 6.00x3.00x600

BEGINNING OF DELIVERY Test pressure, bar: 27...29 : 2.95...3.05 Prestroke mm : (2.90...3.10) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 : 0-60-120-180-240-300 Tolerance $+ - \circ : 0.50 (0.75)$ Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 1200 Rack travel in mm : 14.60...14.70 Del.quantity cm3/: 17.5...17.7 100 s: (17.3...17.9) cm3 : 0.8 100 s: (1.2) 2nd speed rpm : 350.0 Rack travel in mm: 4.8...5.0 Del.quantity cm3/ : 1.6...2.0 100 s: (1.3...2.2) cm3 : 0.4 100 s: (0.6) GUIDE SLEEVE POSITION Control-lever position Dearee: -3 rpm : 800 Rack travel in mm: 0.30...0.70 Governor spring pre-tension Click setting x : 4.00FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1200 Aneroid pressure h: 1500 : 175.5...177.5 1000 : (173.5...179.5) Del.quantity Spread : 8.00 cm3 1000 : (12.00) RATED SPEED 1st version

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ____

Control lever

position degrees: 53...61

Testing:

1st rack travel in: 13.60

rpm : 1245...1255 Speed

2nd rack travel in: 4.00

Speed rpm : 1315...1325

3rd rack travel in: 4.00

Speed rpm: 1320...1330 4th rack travel in: 1400

Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 14...22

Setting point w/out bumper spring

Speed

rpm : 350

Rack travel in mm: 4.9

Testing:

Speed : 100 mq₁

Minimum rack trave: 19.00

Speed rom : 350

Rack travel in mm : 4.80...5.00

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm

hPa : 1500 Pressure Rack travel mm : 14.60...14.70

Measurement

Speed 1/mir: 500

1st pressure hPa : -

Rack travel in m: 7.50...7.90

2nd pressure hPa : 290

Rack travel in m: 9.50...9.60

3rd pressure hPa : 700

Rack travel in m: 12.80...13.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 67.5...71.5 1000 s: (65.5...73.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.60

Speed rpm : 1245...1255

STARTING FUEL DELIVERY

: 100 Speed rom

Del.quantity cm3/: 125.0...165.0

1000 s: (120.0...170.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350 Rack travel in mm : 4.80...5.00

Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5)

Spread cm3 : 4.001000 s: (6.50)

Remarks:

Delivery-valve spring pre-tension = 9091

6.30...6.40 mm.

Permissible alteration from 6.00...6.70

Note remarks

Test sheet

: NAV

Edition

: 15.06.93

Replaces

: 04.93

Test oil

: ISO-4113

Combination no.

: 0 402 076 756A

Injection pump

Pump designation : PES6P100A320LS3317

EP type number

: 0 412 006 706

Governor

Governor design. : RSV350...1200P2A562

Governer no.

: 0 421 833 407

Cust. part no.

: 1820269091A

Customer-spec. information

Customer

: NAVISTAR

Engine

: DTA-466

1st version kW

: 185.0

Rated speed

: 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 058

Inlet press., bar: 2.80

Overflow

quantity min. 1/h: 175...195

Test nozzle holder

assembly

: 1 688 901 101

Opening

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,6

Test lines

: 1 680 750 015

Outside diameter

x Wall thickness

x Length mm

: 6.00x3.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm

: 2.95...3.05

Rack travel in mm : 9.00...12.00

: (2.90...3.10)

Firing order

: 1-5-3-6-2-4

Phasing

: 0 -60-120-180-240-309

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 1200

Rack travel in mm : 13.90...14.00

Del.quantity cm3/: 16.0...16.2

100 s: (15.8...16.4)

Spread

cm3 : 0.8

100 s: (1.2)

rpm : 350.0

Rack travel in mm: 4.8...5.0

Del.quantity cm3/: 1.6...2.0

100 s: (1.3...2.2)

Spread

2nd speed

cm3 : 0.4

100 s: (0.6)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1200

Aneroid pressure h: 1500

Del.quantity

: 160.0...162.0

cm3

1000 : (158.0...164.0)

Spread

: 8.00

1000 : (12.00)

RATED SPEED

1st version Control lever

position degrees: 53...61

Testing:

1st rack travel in: 12.90

Speed rpm: 1250...1260 2nd rack travel in: 4.00

rpm : 1315...1325 Speed

3rd rack travel in: 4.00

rpm : 1320...1330 Speed

4th rack travel in: 1400

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 14...22

Setting point w/out bumper spring

Speed rpm : 350 Rack travel in mm: 4.9

Testina:

Speed : 100 rpm Minimum rack trave: 19.00 rpm : 350 Speed

Rack travel in mm : 4.80...5.00

Aneroid/Altitude Compensator Test

1st version Setting

rpm : 500 hPa : 1500 Speed rpm Pressure

: 13.90...14.00 Rack travel mm

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 7.50...7.90

2nd pressure hPa : 270

Rack travel in m: 9.30...9.40

3rd pressure hPa : 640

Rack travel in m: 12.30...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 67.5...71.5

1000 s: (65.5...73.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.90

rpm : 1250...1260 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 125.0...165.0

1000 s: (120.0...170.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350

Rack travel in mm : 4.80...5.00

Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5)

Spread cm3 : 4.00

1000 s: (6.50)

Delivery-valve spring pre-tension =

6.30...6.40 mm.

Permissible alteration from 6.00...6.70

Note remarks

Test sheet

: NAV

Edition Replaces

: 15.06.93 : 04.93

Test oil

: ISO-4113

Combination no.

: 0 402 076 756B

Injection pump

Pump designation : PES6P100A320LS3317

EP type number

: 0 412 006 706

Governor

Governor design. : RSV350...1200P2A562

Governer no.

: 0 421 833 407

Cust. part no.

: 1820269091B

Customer-spec. information

Customer

: NAVISTAR

Engine

: DTA-466

1st version kW

: 156.0

Rated speed

: 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 058

Inlet press., bar: 2.80

Overflow

quantity min. 1/h: 175...195

Test nozzle holder

assembly : 1 688 901 101

Openina

pressure, bar

: 207...210

Orifice plate

diameter mm : 0,6

Test lines

: 1 680 750 015

Outside diameter

x Wall thickness

x Length mm

: 6.00X3.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values _

BEGINNING OF DELIVERY Test pressure, bar: 27...29

Prestroke mm

: 2.95...3.05

: (2.90...3.10)

Rack travel in mm : 9.00...12.00

Firing order

: 1-5-3-6-2-4

Phasing

: 0-50-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 1200

Rack travel in mm : 13.40...13.50

Del.quantity cm3/: 14.7...14.9

100 s: (14.5...15.1)

Spread

Spread

cn3 : 0.8

100 s: (1.2)

rpm : 350.02nd speed

Rack travel in mm: 4.8...5.0

Del.quantity cm3/: 1.6...2.0

100 s: (1.3...2.2)

cm3 : 0.4

100 s: (0.6)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1200

Aneroid pressure h: 1500

: 147.0...149.0

Del.quantity

1000 : (145.0...151.0)

Spread cm3 : 8.00

1000 : (12.00)

RATED SPEED

1st version Control Lever

position degrees: 53...61

Testing:

1st rack travel in: 12.40

rpm : 1255...1265 Speed

2nd rack travel in: 4.00

rpm : 1315...1325 Speed

3rd rack travel in: 4.00

Speed rpm : 1320...1330 4th rack travel in: 1400

Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 14...22

Setting point w/out bumper spring

Speed rom Rack travel in mm: 4.9

Testing:

Speed rpm : 100 Minimum rack trave: 19.00

Speed : 350 rpm

Rack travel in mm : 4.90...5.00

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed : 500 rom hPa : 1500 Pressure

Rack travel mm : 13.40...13.50

Measurement

Speed $1/\min : 500$

1st pressure hPa : -

Rack travel in m: 7.50...7.90

2nd pressure hPa : 260

Rack travel in m: 9.20...9.30

3rd pressure hPa : 600

Rack travel in m: 12.00...12.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 67.5...71.5

1000 s: (65.5...73.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.40

Speed rpm : 1255...1265

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 125.0...165.0

1000 s: (120.0...170.0)

Rack travel in mm : 20.00...21.00

LOW TOLF

Speed rpm : 350 Rack travel in mm : 4.80...5.00

Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5)

Spread cm3 : 4.00

1000 s: (6.50)

Delivery-valve spring pre-tension =

6.30...6.40 mm.

Permissible alteration from 6.00...6.70

Note remarks

Test sheet

: NAV : 15.06.93 Edition

: 04.93 Replaces Test oil : ISO-4113

Combination no. : 0 402 076 756c

Injection pump

Pump designation : PES6P100A320LS3317

EP type number : 0 412 006 706

Governor

Governor design. : RSV350...1200P2A562

Governer no. : 0 421 833 407

Cust. part no. : 1820269C91C

Customer-spec. information Customer : NAVISTAR

: DTA-466 Engine

1st version kW : 145.0 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 058

Inlet press., bar: 2.80

Overflow

quantity min. 1/h: 175...195

Test nozzle holder

: 1 688 901 101 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00X3.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.95...3.05 Prestroke mm

: (2.90...3.10) Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyt. no. : 1

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 13.5...13.7

100 s: (13.3...13.9)

cm3 : 0.8Spread

100 s: (1.2)

rpm : 350.02nd speed Rack travel in mm: 4.8...5.0 Del.quantity cm3/: 1.6...2.0

100 s: (1.3...2.2)

cm3 : 0.4Spread 100 s: (0.6)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1200 Speed Aneroid pressure h: 1500

: 135.0...137.0 Del.quantity

1000 : (133.0...139.0)

Spread cm3 : 8.00 1000 : (12.00) RATED SPEED

1st version Control Lever

position degrees: 53...61

Testing:

1st rack travel in: 11.80

Speed rpm : 1260...1270

2nd rack travel in: 4.00

Speed rpm : 1315...1325

3rd rack travel in: 4.00

Speed rpm : 1320...1330 4th rack travel in: 1400

Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever

position degrees: 14...22

Setting point w/out bumper spring

: 350 Speed rpm

Rack travel in mm: 4.9

Testina:

Speed rpm : 100

Minimum rack trave: 19.00 Speed rpm : 350

Rack travel in mm : 4.80...5.00

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 500 rpm hPa : 1500 Pressure

: 12.80...12.90 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 7.50...7.90

2nd pressure hPa : 240

Rack travel in m: 9.00...9.10

3rd pressure hPa : 530

Rack travel in m: 11.40...11.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 67.5...71.5

1000 s: (65.5...73.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80

Speed rpm : 1260...1270

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 125.0...165.0 1000 s: (120.0...170.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350 Rack travel in mm : 4.80...5.00

Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5)

Spread cm3 : 4.00

1000 s: (6.50)

Delivery-valve spring pre-tension =

6.30...6.40 mm.

Permissible alteration from 6.00...6.70

Note remarks

Test sheet

: NAV

Edition

: 15.06.93

Replaces

Test oil

: ISO-4113

Combination no. : 0 402 076 760

Injection pump

Pump designation : PES6P100A320LS3317

EP type number

: 0 412 006 706

Governor

Governor design. : RSV415...1100P2A57()

Governer no.

: 0 421 833 420

Customer-spec. information

Customer

: NAVISTAR

Engine

: DT-531

1st version kW

: 145.0

Rated speed

: 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 058

Inlet press., bar: 2.80

Overflow

quantity min. 1/h: 250...270

Test nozzle holder

assembly

: 1 688 901 101

Openina

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,6

Test lines

: 1 680 750 015

Outside diameter

x Wall thickness

x Length mm

: 6.00x3.00x600

(A) Injection pump setting values

Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm

: 2.95...3.05

: (2.90...3.10)

Firing order

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4

Phasina

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rom: 1100

Rack travel in mm: 12.40...12.50

Del.quantity cm3/: 12.8...13.0

100 s: (12.6...13.2)

Spread

cm3 : 0.8

100 s: (1.2)

2nd speed

rpm : 415.0

Rack travel in mm: 4.9...5.1

Del.quantity cm3/: 2.0...2.4 100 s: (1.8...2.7)

Spread

cm3 : 0.4

100 s: (0.6)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Spread

rpm : 1100

Aneroid pressure h: 1200 Del.quantity

: 128.0...130.0

1000 : (126.0...132.0)

: 8.00 cm3

1000 : (12.00)

RATED SPEED

1st version

Control lever

position degrees: 47...55

Testina:

1st rack travel in: 11.40

rpm : 1145...1155 Speed

2nd rack travel in: 4.00

rpm : 1195...1205 Speed

3rd rack travel in: 4.00

rpm : 1200...1210 Speed

4th rack travel in: 1300

Speed rom : 0.30...1.40

LOW IDLE 7

Control lever

position degrees: 16...24

Setting point w/out bumper spring

rom : 415

Rack travel in mm: 5.0

Testing:

Speed rpm : 100

Minimum rack trave: 19.00

rpm : 415 Speed

Rack travel in mm: 4.90...5.10

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed : 500 man

hPa : 1200 Pressure

Rack travel mm : 13.10...13.20

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 8.00...8.40

2nd pressure hPa : 280

Rack travel in m: 9.40...9.50

3rd pressure hPa : 520

Rack travel in m: 11.40...11.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 74.5...78.5

1000 s: (72.5...80.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.40

rpm : 1145...1155 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 125.0...165.0 1000 s: (120.0...170.0) Rack travel in mm: 20.00...21.00

LOW IDLE

rpm : 415 Speed

Rack travel in mm : 4.90...5.10

Del.quantity cm3/: 20.5...24.5 1000 s: (18.0...27.0)

cm3 : 4.00Spread

1000 s: (6.50)

Remarks:

Delivery-valve spring pre-tension = 4091

6.30...6.40 mm.

Permissible alteration from 6.00...6.70

mm

BOSCH INJ. PUMP TEST SPECIFICATIONS Test pressure, bar: 27...29 Note remarks : 2.95...3.05 Prestroke mm : (2.90...3.10) Test sheet Rack travel in mm : 9.00...12.00 : NAV Edition : 02.07.93 Firing order : 1-5-3-6-2-4 Reptaces Test oil : ISO-4113 Combination no. : 0 402 076 761 Phasing : 0-60-120-180-240-300 Phasing Injection pump Tolerance + - ° : 0.50 (0.75) Pump designation : PES6P100A320LS3317 EP type number : 0 412 006 706 Time to cyl. no. : 1 Governor Governor design. : RSV415...1100P2A571 BASIC SETTING : 0 421 833 421 Governer no. 1st speed rpm : 1100Customer-spec. information Customer : NAVISTAR Rack travel in mm : 13.10...13.20 Engine : DT-531 Del.quantity cm3/: 14.4...14.6 1st version kW : 161.0 100 s: (14.2...14.8) Rated speed : 2200 cm3 : 0.8Spread TEST BENCH REQUIREMENTS 100 s: (1.2) Test oil inlet temp. °C : 38...42 2nd speed rpm : 415.0 Rack travel in mm: 4.9...5.1 Overflow valve Del.quantity cm3/: 2.0...2.4 : 1 417 413 058 100 s: (1.8...2.7) Spread cm3 : 0.4Inlet press., bar: 2.80 100 s: (0.6) Overflow GUIDE SLEEVE POSITION quantity min. 1/h: 250...270 Control-lever position Dearee: -3 rpm : 800 Test nozzle holder assembly : 1 688 901 101 Rack travel in mm : 0.30...0.70 Opening Governor spring pre-tension pressure, bar : 207...210 Click setting x : 5.00Lube oil : 6 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Test lines : 1 680 750 015 Speed rpm : 1100 Aneroid pressure h: 1200 Outside diameter : 144.0...146.0 Del.quantity x Wall thickness 1000 : (142.0...148.0) : 6.00x3.00x600 x Length mm Spread cm3 : 8.00 1000 : (12.00) (A) Injection pump setting values Insp. values in parentheses RATED SPEED Set equal delivery quant. per values ___ 1st version Control lever

position degrees: 48...56

BEGINNING OF DELIVERY

Testing:

1st rack travel in: 12.10

rpm : 1145...1155 Speed

2nd rack travel in: 4.00

rpm : 1195...1205 Speed

3rd rack travel in: 4.00

rpm : 1200...1210 Speed

4th rack travel in: 1300

rom : 0.30...1.40Speed

LOW IDLE 1

Control Lever

position degrees: 17...25

Setting point w/out bumper spring

rpm : 415 Speed

Rack travel in mm: 5.0

Testing:

Speed : 100 rom

Minimum rack trave: 19.00

rpm : 415 Speed

Rack travel in mm : 4.90...5.10

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rpm

Pressure hPa : 1200

: 13.10...13.20 Rack travel mm

Measurement

Speed $1/\min : 500$

1st pressure hPa : -

Rack travel in m: 8.00...8.40

2nd pressure hPa : 300

Rack travel in m: 9.40...9.50

3rd pressure hPa : 590

Rack travel in m: 11.80...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 74.5...78.5 1000 s: (72.5...80.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.10

L02

Speed rom : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 125.0...165.0

1000 s: (120.0...170.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed : 415 rpm

Rack travel in mm : 4.90...5.10

Del.quantity cm3/: 20.5...24.5

1000 s: (18.0...27.0)

cm3 : 4.00Spread

1000 s: (6.50)

Remarks:

: NAVISTAR #1817593C91

Delivery-valve spring pre-tension = 6.30...6.40 mm.

Permissible alteration from 6.00...6.70

APPLICATION

Tractor (tractor engines)

Note remarks

Test sheet : MB 22,0 c : 26.02.93 Edition Replaces : 06.92 Test oil : ISO-4113

Combination no. : 0 402 640 817

Injection pump

Pump designation : PE12P12OA520LS7826 EP type number : 0 412 620 817

Governor

Governor design. : RQV350...1150PA870-4

: 0 421 813 717 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: OM 444 LA Engine

1st version kW : 736.0 : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 150...170

Test nozzle holder

assembly : 1 688 901 019

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50

: (4.35...4.55) Rack travel in mm : 19.00...21.00

: 12- 1- 5- 9- 8- 3-Firing order

4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-

180-225-240-285-300-

345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 15.10...15.20

Del.quantity cm3/: 30.9...31.1

100 s: (30.6...31.4)

cm3 : 0.6Spread

100 s: (1.0)

rpm : 350.02nd speed

Rack travel in mm: 5.3...5.9

Del.guantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.8 Spread

100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.30...1.80

rpm : 6002nd speed

: 3.30...3.80 travel mm

3rd speed : 960 rpm

5.30...5.80 travel mm

: 1206 4th speed rpm

: 7.90...8.40 travel mm

: 1291 5th speed rpm

: 9.80...10.30 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1275 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP	- 1st version
4-4	Setting
1st version	- Speed rpm : 500
Speed rpm: 1150	Pressure hPa : -
Aneroid pressure h: 1800	- Rack travel mm : 8.308.60
Del.quantity : 309.0311.0	^
1000 : (306.0314.0)	- Measurement
Spread cm3 : 6.00 - 1000 : (10.00)	Speed 1/min:500
2nd version	1-t
	- 1st pressure hPa : 400
Speed rpm : 1150 Aneroid pressure h: 1800	Rack travel in m: 10.0010.10
Del.quantity cm3/: 309.0311.0	- 2nd pressure hPa : 1050 - Rack travel in m: 14.1014.30
1000 s: (306.8314.0)	- Rack travet in m: 14.1014.50 - 2th version
Spread cm3 : 6.00	- Setting
1000 s: (10.0)	- Speed rpm : 500
1900 3. (10.0)	Pressure hPa : -
RATED SPEED	- Rack travel in mm : 8.208.50
	- Mack Cravec III IIIII . 0.200.30
1st version	- Measurement
Control lever	- Speed rpm : 500
position degrees: 113121	-
	1st pressure hPa : 300
Testing:	- Rack travel in m: 9.809.90
1st rack travel in: 14.20	- 2nd pressure hPa : 1100
Speed rpm : 11901200	Rack travel in m: 14.014.2
2nd rack travel in: 4.00	-
Speed rpm : 12701300	- START CUT-OUT
4th rack travel in: 1350	•
Speed rpm : 0.001.00	- Speed 1/min: 310 (330)
2nd version	EUSEL DEL TUEDV CUADACTEDICTICO
Control lever	- FUEL DELIVERY CHARACTERISTICS
position degrees; 113121	
position degrees, 1131	- 1st version
Testing:	- Aneroid pressure h: 1800
1st rack travel in: 14.20	- Speed rpm : 750
Speed rpm : 11901200	- Del.quantity cm3/ : 303.0313.0
2nd rack travel in: 4.00	- 1000 s: (306.0316.0)
Speed rpm : 12701300	- Spread cm3 : 10.00
4th rack travel in: 1350	- 1000 s: (15.0)
Speed rpm : 0.001.00	- Aneroid pressure h: 1800
+	- Speed rpm : 1150
LOW IDLE 1	<pre>- Del.quantity cm3/ : 240.0243.0 *</pre>
Control lever	- 1000 s: (237.0246.0)
position degrees: 6270	- Spread cm3 : 10.00
Tocting	- 1000 s: (15.0)
Testing: Speed rpm : 250	- Aneroid pressure h: -
Speed rpm : 250 Minimum rack trave: 7.30	- Speed rpm : 500
Speed rpm : 350	- Del.quantity cm3/ : 128.0130.0 - 1000 s: (125.0133.0)
Rack travel in mm: 5.305.90	- Spread cm3 : 10.00
The state of the second section is a second	- 1000 s: (15.0)
CONSTANT REGULATION	- 1000 3. (1 <i>).</i> 0/
Speed rpm : 350600	- 2nd version
	- Aneroid pressure h: 1800
Aneroid/Altitude	- Speed rpm : 750
Compensator Test	- Del.quantity cm3/: 303.0313.0
<u> </u>	- 1000 s: (300.0316.0)
I I	1000 0: 10001011,01010;

Spread cm3 : 10.00

1000 s: (15.0)

Aneroid pressure h: 1800 Speed rpmin: 1150 Del.quantity cm3/: 240.0...243.0 * 1000 s: (237.0...246.0)

cm3 : 10.00 Spread 1000 s: (15.0)

Aneroid pressure h: -

Speed rpm: 500
Del.quantity cm3/: 128.0...130.0
1000 s: (125.0...133.0)
Spread cm3: 10.00

1000 s: (15.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 14.20

Speed rpm : 1190...1200

2nd version

1mm rack travel less than full load rack tr: 14.20

Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 330.0...350.0 1000 s: (326.0...354.0)

Remarks:

Values of version 1 only apply to regulators with LDA spring 2 424 619 162.

* = Set at reduced-delivery stop.

Note remarks

Test sheet : MB 22,0 c 2 Edition : 31.07.92 Replaces : 04.92 Test oil : ISO-4113

Combination no. : 0 402 640 828

Injection pump

Pump designation : PE12P120A520LS7826

: 0 412 620 817 EP type number

Governor

: RQV350...1050PA870 Governor design.

-13

: 0 421 813 934 Governer no.

Customer—spec. information

: MERCEDES-BENZ Customer

Engine : OM 444 LA

1st version kW : 620.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 150...170

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.40...4.50 Prestroke mm

: (4.35...4.55) Rack travel in mm : 19.00...21.00

: 12- 1- 5- 9- 8- 3-4- 11- 10- 2- 6- 7 Firing order

: 0-45-60-105-120-165-Phasing

180-225-240-285-300-

345

: 0,50 (0.75) Tolerance + - °

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 14.00...14.10

Del.quantity cm3/: 27.4...27.6

100 s: (27.1...27.9)

Spread cm3 : 0.6

100 s: (1.0)

rpm : 350.02nd speed Rack travel in mm: 5.3...5.9

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.8 Spread 100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.30...1.80

2nd speed 570 rpm :

: 3.30...3.80 travel mm

rpm : 900 3rd speed

: 5.40...5.90 travel mm

rpm : 1107 4th speed

: 7.80...8.30 travel mm

rpm : 1204 5th speed

: 9.80...10.30 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050 Aneroid pressure h: 1800

Del.quantity : 274.0...276.0 1000 : (271.0...279.0)

: 6.00 Spread cm3 1000 : (10.00)

RATED SPEED

1st version Control lever

position degrees: 114...122

Testina:

1st rack travel in: 13.00

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

rpm : 1170...1200 Speed

4th rack travel in: 1250

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 59...67

Testing:

Speed : 250 rpm Minimum rack trave: 7.30 Speed rpm : 350

Rack travel in mm : 5.50...5.70

CONSTANT REGULATION

rpm : 350...600 Speed

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm

Pressure hPa : -

Rack travel mm : 8.00...8.30

Measurement

1/min: 500 Speed

1st pressure hPa : 300

Rack travel in m: 9.40...9.50

2nd pressure hPa : 900

Rack travel in m: 12.70...12.90

START CUT-OUT

Speed 1/min : 310 (330) FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1800 : 750 rpm

Del.quantity cm3/: 268.0...272.0

1000 s: (265.0...275.0)

Spread cm3 : 10.00

1000 s: (15.0)

Aneroid pressure h: -

1000 s: (15.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 330.0...350.0

1000 s: (326.0...354.0)

Remarks:

L07

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : SCA Edition : 22.01.93 Replaces Test oil : ISO-4113 Combination no. : 0 402 646 600 Injection pump Pump designation : PE6P120A720RS7022 EP type number : 0 412 626 873 Governor Governor design. : RQV200...1000PA539 -14 : 0 421 814 011 Governer no. Customer-spec. information Customer : SCANIA Engine : DS11 76 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder assembly : 1 688 901 104 Openina : 250...253 pressure, bar Orifice plate diameter mm : 0.7 Test lines : 1 680 750 008 Outside diameter x Wall thickness x Length mm : 6.00X2.00X600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 25...27

> : 4.40...4.50 : (4.35...4.55)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 700 Rack travel in mm : 10.90...11.00 Del.quantity cm3/: 16.8...17.0 100 s: (16.5...17.3) Spread cm3 : 0.8100 s: (1.2) 2nd speed rpm : 250.0 Rack travel in mm: 4.6...5.0 Del.quantity cm3/: 1.5...1.9 100 s: (1.2...2.2) Spread cm3 : 0.4100 s: (0.8) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 225 : 1.20...1.60 travel mm 2rid speed rpm : 350 travel mm : 2.40...3.00 3rd speed rpm : 650 : 4.50...5.10 travel mm 4th speed rpm : 1045 travel mm : 8.40...8.60 : 1150 5th speed mar : 9.80...10.20 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1050 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 700 Aneroid pressure h: 1500 Del.quantity : 700.0....73.0)

Prestroke mm

Spread

cm3 : 8.00

1000 : (12.00)

RATED SPEED

1st version

Control lever

position degrees: 112...120

Testing:

1st rack travel in: 9.90

rpm : 1040...1050 Speed

2nd rack travel in: 4.00

rpm : 1115...1145 Speed

4th rack travel in: 1250

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 63...71

Testing:

Speed : 100 rom

Minimum rack trave: 6.20

rpm : 250

Rack travel in mm : 4.60...4.80 Rack travel in mm: 2.00

rpm : 390...450 Speed

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed : 500 rpm

hPa : 1500 Pressure

: 10.90...11.00 Rack travel mm

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 9.90...10.30

2nd pressure hPa : 390

Rack travel in m: 10.60...10.70

3rd pressure hPa : 340

Rack travel in m: 10.20...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500

rpm : 1000

Del.quantity cm3/: 166.0...174.0

1000 s: (164.0...176.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 142.0...146.0 1000 s: (140.0...148.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.90

rpm : 1040...1050 Speed

STARTING FUEL DELIVERY

rpm : 100

Rack travel in mm : 9.90...10.30

LOW IDLE

Speed rpm : 250

Rack travel in mm : 4.60...4.80

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders

to 2.9...3.1 mm.

Start-of-delivery setting with ROBO

diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Note remarks Test sheet : SCA : 22.01.93 Edition Phasina : 0-60-120-180-240-300 Replaces Test oil : ISO-4113 Tolerance $+ - ^{\circ} : 0.50 (0.75)$ Combination no. : 0 402 646 604 Time to cyl. no. : 1 Injection pump BASIC SETTING Pump designation : PE6P120A720RS7188 EP type number : 0 412 626 832 rpm: 700 1st speed Governor : RQV350...1050PA795 Governor design. Rack travel in mm : 13.30...13.40 -13 : 0 421 814 017 Governer no. Del.quantity cm3/: 23.5...23.7 Customer-spec. information 100 s: (23.2...24.0) Customer : SCANIA Spread cm3 : 0.8Engine : DS11 Allvary 100 s: (1.2) TEST BENCH REQUIREMENTS 2nd speed rpm : 350.0Test oil Rack travel in mm : 4.6...5.0 inlet temp. °C Del.quantity cm3/: 2.0...2.6 : 38...42 100 s: (-) Overflow valve Spread cm3 : 0.4 : 1 417 413 025 100 s: (0.8) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 104 assembly GUIDE SLEEVE TRAVEL 1st speed rpm : 350 Openina travel mm : 1.20...1.60 pressure, bar : 250...253 2nd speed rpm : 650 travel mm : 4.10...4.70 Orifice plate rpm : 1095 3rd speed diameter mm : 0,7 travel mm : 7.30...7.50 4th speed : 1240 rpm travel mm : 8.60...9.00 Test lines : 1 680 750 008 GUIDE SLEEVE POSITION Outside diameter Control-lever position x Wall thickness Degree: -1 rpm : 1280 x Length mm : 6.00x1.50x600 Speed Rack travel in mm : 11.00...13.00 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. FULL LOAD DELIV. AT FULL LOAD STOP per values 1st version Speed rpm : 700BEGINNING OF DELIVERY Aneroid pressure h: 1500 Test pressure, bar: 25...27 Del.quantity : 235.0...237.0 1000 : (232.0...240.0)

: 8.00

1000 : (12.00)

cm3

Spread

Prestroke mm

: 4.40...4.50

: (4.35...4.55)

RATED SPEED

1st version

Control lever

position degrees: 98...106

Testing:

1st rack travel in: 13.10

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

rpm : 1215...1245 Speed

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 68...76

Testing:

Speed : 100 rom

Minimum rack trave: 10.00

: 350 Speed rpm

Rack travel in mm : 4.60...4.80

Rack travel in mm : 2.00

rpm : 375...435 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rom : 500

Pressure hPa : 1500

Rack travel mm : 13.30...13.40

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.20...10.60

2nd pressure hPa : 440

Rack travel in m: 12.00...12.10

3rd pressure hPa : 270

Rack travel in m: 10.90...11.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500

rpm : 1050 Speed

Del.quantity cm3/: 207.0...215.0

1000 s: (205.0...218.0)

Aneroid pressure h: -

: 500 Speed rpm

Del.quantity cm3/: 152.0...154.0 1000 s: (148.0...156.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.10

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Rack travel in mm : 13.30...13.40

LOW IDLE

Speed rpm

: 350

Rack travel in mm : 4.60...4.80

Remarks:

Delivery-valve spring pre-tension

 $3.2...3.4 \, \text{mm}$.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders

to 2.9...3.1 mm.

Start-of-delivery setting with ROBO

diaphragm.

Note remarks

Test sheet : MB

Edition : 27.11.92

Replaces : -

Test oil : ISO-4113

Combination no. : 0 402 646 791

Injection pump

Pump designation : PE6P120A320LS7864

EP type number : 0 412 626 879

Governor

Governor design. : RQV350...1050PA1052

-1

Governer no. : 0 421 814 041

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M401 LA

1st version kW : 230.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 105

Opening |

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

× Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35) Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 6

BASIC SETTING

1st speed ppm: 700

Rack travel in mm : 13.00...13.10

Del.quantity cm3/: 22.9...23.1

100 s: (22.6...23.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.5...6.1 Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm3 : 0.6 100 s: (1.0)

(B) Setting of injection pump with governor

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm: 350

travel mm : 1.00...1.50

2nd speed rpm : 453

travel mm : 2.30...2.80

3rd speed rpm: 770

travel mm : 4.70...5.20

4th speed rpm : 1108

travel mm : 9.40...9.90

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

peed rpm : 1180

Rack travel in mm : 10.40...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 700

Aneroid pressure h: 1000

Del.quantity : 229.0...234.0) cm3 : 5.00 Spread 10000 : (9.00)RATED SPEED 1st version Control lever position degrees: 98...106 Testina: 1st rack travel in: 11.70 Speed rpm : 1090...1100 2nd rack travel in: 4.00 rpm : 1145...1175 Speed 4th rack travel in: 1300 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 64...72 Testing: Speed : 250 HOM Minimum rack trave: 8.80 Speed : 350 rom Rack travel in mm : 5.10...5.30 Rack travel in mm: 2.00 Speed : 430...470 man CONSTANT REGULATION rpm : 380...500 Speed TORQUE CONTROL Dimension a mm : 0.40 Torque control curve - 1st version rpm : 700 1st speed Rack travel in m: 13.00...13.10 2nd speed rpm : 1050 Rack travel in m: 12.60...12.80 3rd speed rpm : 850 Rack travel in m: 12.90...13.10 Aneroid/Altitude Compensator Test 1st version Settina Speed : 500 rom hPa : -Pressure Rack travel mm : 10.00...10.30

1/min: 500

Rack travel in m: 10.70...10.80

1st pressure hPa : 300

2nd pressure hPa : 650

Rack travel in m: 12.40...12.60 START CUT-OUT 1/min : 270 (290) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 Speed rpm : 1050 Del.quantity cm3/ : 216.0...220.0 1000 s: (213.0...223.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: 1000 Speed : 1050 rpm Del.quantity cm3/: 162.0...166.0 * 1000 s: (159.0...169.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 134.0...136.0 1000 s: (131.0...139.0) Spread cm3 : 8.00 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.70 Speed rpm : 1090...1100 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 240.0...260.0 1000 s: (236.0...264.0) Remarks: * = Set at reduced-delivery stop.

Measurement

Speed

Note remarks

Test sheet

: MB

Edition

: 27,11,92

Replaces

: 10.92

Test oil

: ISO-4113

Combination no.

: 0 402 646 799

Injection pump

Pump designation: PE6P12OA32OLS7852

EP type number

: 0 412 626 871

Governor

Governor design. : RQ300/950PA1031-5

Governer no.

: 0 421 801 657

Customer-spec. information

Customer

: MERCEDES-BENZ

Engine

: 0M441 LA

1st version kW

: 250.0

Rated speed

: 1900

2nd version kW

: 250

Rated speed

: 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly

: 1 688 901 105

Opening 1

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,8

Test Lines

: 1 680 750 075

Outside diameter

x Wall thickness

x Length mm

: 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order

: 6-3-5-2-4-1

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed

rpm: 600

Rack travel in mm : 14.00...14.10

Del.quantity cm3/: 23.4...23.6

100 s: (23.1...23.9)

Spread

Spread

cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm: 5.6...6.2

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 600

Aneroid pressure h: 1100

Del.quantity : 234.0...236.0

1000 : 5.00 cm3

: (231.0...239.0)

Spread

Speed

1000 : (9.00)

2nd version

rpm : 600 Aneroid pressure h: 1100

L14

Del.quantity cm3/: 234.0...236.0 1000 s: (231.0...239.0) 1st pressure hPa : 250 cm3 : 5.00 Rack travel in m: 11.00...11.10 Spread 1000 s: (9.00) 2nd pressure hPa : 550 Rack travel in m: 13.00...13.20 RATED SPEED 2th version Settina 1st version Speed rpm : 500 Pressure hPa Setting point: Rack travel in mm : 10.1...10.4 Speed rpm : 600 Rack travel in mm: 20.0 Measurement Speed : 500 rom Testina: 1st rack travel in: 13.00 1st pressure hPa : 300 Speed rpm : 990...1005 Rack travel in m: 10.8...10.9 2nd rack travel in: 4.00 2nd pressure hPa : 700 rpm : 1070...1100 Speed Rack travel in m: 12.9...13.1 4th rack travel in: 1300 Speed rom : 0.00...1.50START CUT-OUT 2nd version 1/min : 220 (240) Speed? Setting point: FUEL DELIVERY CHARACTERISTICS Speed rom Rack travel in mm: 20.0 1st version Testing: Aneroid pressure h: 1100 1st rack travel in: 13.00 : 950 Speed rpm rpm : 990...1005 Speed Del.quantity cm3/: 228.0...232.0 2nd rack travel in: 4.00 1000 s: (225.0...235.0) rpm : 1070...1100 cm3 : 8.00 Speed Spread 4th rack travel in: 1300 1000 s: (12.0) rpm : 0.00...1.50Speed Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 132.0...134.0 LOW IDLE 1 Setting point w/out bumper spring 1000 s: (129,0...137.0) rpm : 300 cm3 : 8.00 Spread Rack travel in mm: 5.9 1000 s: (12.0) Testing: 2nd version Speed rpm : 200 Aneroid pressure h: 1100 Minimum rack trave: 8.10 rpm : 950 Speed Del.quantity cm3/: 228.0...232.0 rpm : 300 Rack travel in mm : 5.80...6.00 1000 s: (225.0...235.0) Rack travel in mm: 2.00 cm3 : 8.00 Spread : 380...420 Speed 1000 s: (12.0) rom Aneroid pressure h: -Speed rpmin: 500
Del.quantity cm3/: 132.0...134.0
1000 s: (129.0...137.0) Aneroid/Altitude Compensator Test cm3 : 8.00 Spread 1st version 1000 s: (12.0) Setting : 500 Speed rom Pressure hPa : -**BREAKAWAY** : 10,10...10.40 Rack travel mm 1st version Measurement 1mm rack travel less than 1/min: 500 Speed

L15

full load rack tr: 13.00 Speed rpm : 990...1005

2nd version 1mm rack travel less than full load rack tr: 13.00 Speed rpm : 990...1005

Values of version 1 only apply to regulators with LDA spring 2 424 619 162.

Note remarks

Test sheet

: 30.04.92 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 546 840

Injection pump

Pump designation: PE6P120A320LS7808-11

EP type number : 0 412 626 851

Governor

Governor design. : RQ325/1050PA762-3

: 0 421 801 381 Governer no.

Customer-spec. information

Custamer : DAIMLER-BENZ

Engine : 0M441 LA

1st version kW : 240.0

: 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 C25

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10

: (3.95...4.15) Rack travel in mm : 20.00...21.00

: 6-3-5-2-4-1 Firing order

Phasing : 0-45-120-165-240-285

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.50...14.70

Del.guantity cm3/: 20.9...21.1

100 s: (20.6...21.4)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 325.02nd speed Rack travel in mm: 6.4...6.6 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread 100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 800

Del.quantity : 209.0...211.0 1000 : (206.0...214.0)

cm3 : 5.00

Spread 1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 600 rpm Rack travel in mm: 20.0

Testing: 1st rack travel in: 14.40 rpm : 1095...1110 Speed 2nd rack travel in: 4.00 rpm : 1195...1225 4th rack travel in: 1300 rpm : 0.00...1.50 Speed LOW IDLE 1 Setting point wout bumper spring rpm : 325 Rack travel in mm: 6.5 Testing: Speed rpm : 100 Minimum rack trave: 8.00 mpm : 325 Speed Rack travel in mm : 6.40...6.60 Rack travel in mm: 2.00 Speed rpm : 405...445 TORQUE CONTROL Dimension a mm : 0.30 rpm : 1050 2nd speed Rack travel in m: 15.40...15.60 3rd speed rpm : 800 Rack travel in m: 15.70...15.90 4th speed rpm : 700 Aneroid/Altitude Compensator Test 1st version Settina Speed : 600 rpm Pressure hPa : 800 Rack travel mm : 14.50...14.70 Measurement 1/min: 600 Speed 1st pressure hPa : 300 Rack travel in m: 12.20...12.40 2nd pressure hPa : 450 Rack travel in m: 13.30...13.50 3rd pressure hPa : 900 Rack travel in m: 14.60...14.70 * 4th pressure hPa : 1100 Rack travel in m: 13.30...13.50 5th pressure hPa : -Rack travel in m: 11.30...11.50

1st version Aneroid pressure h: 1300 rpm : 1050 Del.quantity cm3/: 231.0...234.0 1000 s: (228.0...237.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 1300 Speed rpm : 800 Del.quantity cm3/: 234.0...238.0 1000 s: (231.0...241.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 133.0...135.0 1000 s: (130.0...138.0) Spread cm3 : 8.001000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 14.40 Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 190.0...210.0 1000 s: (186.0...214.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

Speed

START CUT-OUT

1/min : 245 (265)

FUEL DELIVERY CHARACTERISTICS

Note remarks

Test sheet

: MB

Edition

: 30.04.92

Replaces

Test oil

: ISO-4113

Combination no. : 0 402 646 843

Injection pump

Pump designation : PE6P120A320LS7808-10

EP type number

: 0 412 626 850

Governor

Governor design. : RQV300...1050PA797-2

Governer no.

: 0 421 813 614

Customer-spec. information

Customer

: MERCEDES-BENZ

Engine

: 0M441 LA

1st version kW

Rated speed

: 240.0 : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzie holder

assembly

: 1 688 901 105

Openina

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,8

Test lines

: 1 680 750 075

Outside diameter

x Wall thickness

x Length mm

: 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 5.20...5.30

: (5.15...5.35)

Firing order

Rack travel in mm : 20.00...21.00

: 6-3-5-2-4-1

Phasina

: 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 6

BASIC SETTING

1st speed

rom: 600

Rack travel in mm : 13.90...14.10

Del.quantity cm3/: 21.4...21.6

100 s: (21.1...21.9)

Spread

Spread

cm3 : 0.5

100 s: (0.9)

2nd speed

rpm : 300.0

Rack travel in mm: 5.6...6.2

Del.quantity cm3/: 1.3...1.9 100 s: (1.0...2.2)

cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 300

travel mm

: 1.20...1.40

2nd speed travel mm

rpm : 600

3rd speed

: 4.90...5.10

travel mm

rpm : 1075

: 7.40...7.60

4th speed travel mm

: 1100 rpm

: 8.00...8.40 rpm : 1150

5th speed travel mm

Speed

: 9.00...9.40

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1125

Rack travel in mm : 15.80...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version 3rd pressure hPa : 1050 rpm : 600 Speed Rack travel in m: 14.00...14.10 * 4th pressure hPa : 1150 Aneroid pressure h: 900 : 214.0...216.0 Rack travel in m: 14.40...14.60 Del.quantity 1000 : (211.0...219.0) 5th pressure hPa : -Spread : 5.00 Rack travel in m: 9.50...9.80 cm3 1000 : (9.00) START CUT-OUT RATED SPEED Speed 1/min: 220 (240) 1st version Control lever FUEL DELIVERY CHARACTERISTICS position degrees: 121...129 Testing: 1st version 1st rack travel in: 13.80 Aneroid pressure h: 1450 Speed rpm : 1095...1110 rpm : 1050 Speed Del.quantity cm3/: 231.0...234.0 1000 s: (228.0...237.0) 2nd rack travel in: 4.00 Speed rpm : 1170...1200 4th rack travel in: 1300 cm3 : 8.00Spread rpm : 0.00...1.00 1000 s: (12.0) Speed Aneroid pressure h: 1450 LOW IDLE 1 Speed : 800 rpm Del.quantity cm3/: 237.0...241.0 1000 s: (234.0...244.0) Control lever position degrees: 81...89 cm3 : 8.00Spread 1000 s: (12.0) Testing: : 200 Speed Aneroid pressure h: rom Minimum rack trave: 7.90 Speed : 500 rpm Del.quantity cm3/: 142.0...144.0 1000 s: (139.0...147.0) rpm : 300 Rack travel in mm : 5.60...6.20 Spread cm3 : 8.001000 s: (12.0) CONSTANT REGULATION rpm : 300...450 Speed TORQUE CONTROL BREAKAWAY Dimension a mm : 0.30 : 1050 2rid speed POTA 1st version Rack travel in m: 14.80...15.00 1mm rack travel less than 3rd speed rpm : 800 Rack travel in m: 15.00...15.20 4th speed rpm : 700 full load rack tr: 13.80 rpm : 1095...1110 Speed Aneroid/Altitude STARTING FUEL DELIVERY Compensator Test Speed rpm : 100 Del.quantity cm3/: 200.0...220.0 1st version 1000 s: (196.0...224.0) Setting Speed : 600 rpm Pressure hPa : 900 Remarks: Rack travel mm : 13.90...14.10 Measurement * Increase in control-rod travel with 1/min: 600 Speed respect to setting at least 0.1 mm 1st pressure hPa : 300 Rack travel in m: 10.70...10.90

2nd pressure hPa : 550

Rack travel in m: 12.90...13.10

Note remarks

Test sheet : SCA 11,1 r Edition : 16.07.93 Replaces : 06.93 Test oil : ISO-4113

Combination no. : 0 402 646 887

Injection pump

Pump designation : PE6P120A720RS7188 EP type number : 0 412 626 832

Governor

Governor design. : RQV200...950PA725-7

Governer no. : 0 421 813 803

Customer-spec. information Customer : SCANTA

Engine : DSC 11 23

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 2.50

Overflow

quantity min. 1/h: 170...210

Test nozzle holder

assembly : 1 638 901 104

Opening

pressure, bar : 250...253

Orifice plate

diameter mm : 0.7

Test Lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.45...4.55 : (4.40...4.60)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.30 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 13.80...13.90

Del.quantity cm3/: 25.1...25.3

100 s: (24.8...25.6)

cm3 : 0.8 Spread

100 s: (1.2)

2nd speed rpm : 250.0 Rack travel in mm: 4.6...5.0

Del.quantity cm3/: 1.3...1.9 100 s: (1.0...2.2)

cm3 : 0.4

Spread 100 s: (0.8)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 225 : 1.20...1.60 travel mm

2nd speed rpm : 350

: 2.40...3.00 travel mm

3rd speed rpm : 650

: 4.50...5.10 travel mm

4th speed rpm : 1045

travel mm : 8.40...8.60

rpm : 1125 5th speed

: 9.30...9.70 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 7.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed Aneroid pressure h: 1500 Del.quantity : 251.0...256.0)

: 8.00 Spread cm3

1000 : (12.00)

RATED SPEED

1st version Control lever

position degrees: 110...118

Testing:

1st rack travel in: 12.80

rpm : 990...1000 Speed

2nd rack travel in: 4.00

Speed rpm : 1110...1140 4th rack travel in: 1250

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 60...68

Testina:

Speed rpm : 150 Minimum rack trave: 6.00

Speed rpm : 250 Rack travel in mm : 4.60...4.80

Rack travel in mm : 2.00

rpm : 370...430 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

rpm : 500 hPa : 1500 Speed rom Pressure

: 13.80...13.90 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa :-

Rack travel in m: 10.20...10.60

2nd pressure hPa : 440

Rack travel in m: 12.00...12.10

3rd pressure hPa : 270 Rack travel in m: 10.90...11.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500 rpm : 950 Speed

Del.quantity cm3/: 233.0...241.0

1000 s: (231.0...243.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/: 152.0...154.0 1000 s: (149.0...157.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.80

rpm : 990...1000 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 145.0...185.0

1000 s: (141.0...189.0)

Rack travel in mm : 10.20...10.60

LOW IDLE

: 250 Speed rom

Rack travel in mm : 4.60...4.80

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...35 mm

Because of flattening, set the spring preload on new delivery-valve holders

to 2.9...3.1 mm.

Start-of-delivery setting with ROBO

diaphragm.

Note remarks

Test sheet

: 30.04.92 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 897

Injection pump

Pump designation: PE6P12OA320LS7808-10

EP type number : 0 412 626 850

Governor

Governor design. : PQ300/950PA762-10

: 0 421 801 511 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M441 LA

1st version kW : 249.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 13.90...14.10

Del.quantity cm3/: 21.4...21.6

100 s: (21.1...21.9)

cm3 : 0.5 Spread

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm: 5.7...6.0

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 900

: 214.0...216.0 Del.quantity

1000 : (211.0...219.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 600 rpm Rack travel in mm: 20.0

Testing: 1st rack travel in: 13.80 rpm : 990...1005 Speed . 2nd rack travel in: 4.00 rpm : 1065...1095 Speed 4th rack travel in: 1200 rom : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 5.8 Testing: Speed : 200 rpm Minimum rack trave: 7.70 : 300 rpm Rack travel in mm : 5.70...6.00 Rack travel in mm: 2.00 Speed rpm : 380...420 Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 600 Pressure hPa : 900 : 13.90...14.10 Rack travel mm Measurement Speed $1/\min : 600$ 1st pressure hPa : 300 Rack travel in m: 11.00...11.20 2nd pressure hPa : 550 Rack travel in m: 13.10...13.30
3rd pressure hPa : 1100
Rack travel in m: 14.10...14.20
4th pressure hPa : 1200 Rack travel in m: 14.50...14.70 5th pressure hPa : -Rack travel in m: 9.50...9.80 START CUT-OUT Speed 1/min: 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1350 rpm : 950 Del.quantity cm3/: 241.0...243.0 1000 s: (238.0...246.0) cm3 : 8.00 Spread 1000 s: (12.0)

Aneroid pressure h: 1350 Speed rpm : 800 Del.quantity cm3/: 241.0...246.0 1000 s: (238.0...249.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: -: 500 Speed rpm Del.quaritity cm3/: 145.0...147.0 1000 s: (142.0...150.0) cm3 : 8.00 Spread 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.80 Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 205.0...225.0 1000 s: (201.0...229.0)

Remarks:

L24

Note remarks

Test sheet

: 30.04.92 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 901

Injection pump

Pump designation: PE6P120A320LS7808-10

EP type number : 0 412 626 850

Governor

Governor design. : RQV300...950PA797-12

Governer no. : 0 421 813 840

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M441 LA Engine

: 249.0 1st version kW

: 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter

x Wall thickness

x Length mm : 6.00x1,50x1000

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)
Rack travel in mm : 20.00...21.00

: 6-3-5-2-4-1 Firina order

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no.

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 13.90...14.10

Del.quantity cm3/: 21.4...21.6

100 s: (21.1...21.9)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm : 5.7...6.0 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6 Spread

100 s: (1.0)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 3001st speed

travel mm : 1.10...1.40

2nd speed : 620 rpm

5.00...5.40 travel mm

: 780 3rd speed rpm

: 6.00...6.50 travel mm

4th speed : 1010 rpm

travel mm : 8.30...8.80

5th speed : 1100 man

: 9.80...10.30 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1040 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm : 600 Amenoid pressure h: 900 Del.quantity : 214.0...216.0 1000 : (211.0...219.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 117...125 Testina: 1st rack travel in: 13.80 rpm : 990...1000 Speed 2nd rack travel in: 4.00 rpm : 1065...1095 Speed 4th rack travel in: 1200 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 80...88 Testing: Speed rpm Minimum rack trave: 7.70 : 300 mcn Rack travel in mm : 5.70...6.00 CONSTANT REGULATION Speed rpm : 300...500 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rpm Pressure hPa : 900 Rack travel mm : 13.90...14.10 Measurement 1/min: 600 Speed 1st pressure hPa : 300 Rack travel in m: 11.00...11.20 2nd pressure hPa : 550 Rack travel in m: 13.10...13.30 3rd pressure hPa : 1100 Rack travel in m: 14.10...14.20 4th pressure hPa : 1200 Rack travel in m: 14.50...14.70 5th pressure hPa : -Rack travel in m: 9.50...9.80 START CUT-CUT

Speed 1/min: 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1350 Speed rpm: 950 Del.quantity cm3/: 241.0...243.0 1000 s: (238.0...246.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: 1350 Speed rpm : 800 Del.quantity cm3/: 241.0...246.0 1000 s: (238.0...249.0) Spread cm3 : 8.001000 s: (12.9) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 145,0...147.0 1000 s: (142.0...150.0) Spread cm3 : 8.001000 s: (12.0) BREAKAWAY 1st version 1mm rack travel less than

full load rack tr: 13.80 Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 205.0...225.0 1000 s: (201.0...229.0)

:

Remarks:

L26

BOSCH INJ. PUMP TEST SPECIFICATIONS BEGINNING OF DELIVERY Test pressure, bar: 25...27 Note remarks : 5.50...5.60 Prestroke mm Test sheet : (5.45...5.65) : MB Edition : 30.04.92 Rack travel in mm : 20.00...21.00 Replaces Firing order : 6-3-5-2-4-1 Test oil : ISO-4113 Combination no. : 0 402 646 906 Phasing : 0-60-120-180-240-300 Injection pump Pump designation: PE6P120A320LS7832-10 Tolerance + - ° : 0.50 (0.75) EP type number : 0 412 626 852 Governor Time to cyl. no. : 6 Governor design. : RQ300/1050PA952 Governer no. : 0 421 801 521 BASIC SETTING Customer-spec. information 1st speed rpm : 600 Customer : MERCEDES-BENZ Rack travel in mm : 14.80...15.00 Engine : 0M401 LA Del.quantity cm3/: 22.0...22.2 1st version kW : 228.0 : 2100 Rated speed 100 s: (21.7...22.5) TEST BENCH REQUIREMENTS Spread cm3 : 0.5Test oil 100 s: (0.9) inlet temp. °C : 38...42 2nd speed rpm : 300.0 Rack travel in mm: 6.4...7.0 Overflow valve Del.quantity cm3/: 1.6...2.2 : 1 417 413 025 100 s: (1.3...2.5) Inlet press., bar: 1.50 Spread cm3 : 0.6100 s: (1.0) Overflow quantity min. 1/h: 100...120 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -2 : 1 688 901 019 rpm : 600 assembly Speed Rack travel in mm: 19.20...20.80 **Opening** pressure, bar : 207...210 FULL LOAD DELIV. AT FULL LOAD STOP Orifice plate 1st version diameter mm : 0,8 Speed rpm : 600 Aneroid pressure h: 1000 Del.quantity : 220.0...222.0 Test lines : 1 680 750 067 1000 : (217.0...225.0) : 5.00 Spread cm3 Outside diameter 1000 : (9.00) x Wall thickness

: 6.00X1.50X1000 + RATED SPEED

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.

per values ____

Setting point: Speed rpm : 600 Rack travel in mm : 20.0

1st version

x Length mm

Testina:

1st rack travel in: 13.70

rpm : 1095...1110 Speed

2nd rack travel in: 4.00

: 1150...1180 Speed rpm

4th rack travel in: 1300

Speed rom : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

rpm : 300 Speed Rack travel in mm: 6.7

Testing:

: 200 Speed rpm Minimum rack trave: 8.70

: 300 rom

Rack travel in mm : 6.40...7.00

Rack travel in mm : 2.00

: 390...430 Speed man

TORQUE CONTROL

Dimension a mm : 0.35

: 1050 2nd speed rpm

Rack travel in m: 14.70...14.90

rpm : 800 3rd speed

Rack travel in m: 15.20...15.40

Aneroid/Altitude

Compensator Test

1st version

Setting

: 600 Speed rom hPa : 1000 Pressure

Rack travel mm : 14.80...15.00

Measurement

Speed $1/\min : 600$

1st pressure hPa : 300 Rack travel in m: 11.20...11.40

2nd pressure hPa : 550

Rack travel in m: 13.50...13.70

3rd pressure hPa : 1400

Rack travel in m: 14.90...15.00 *

4th pressure hPa : -

Rack travel in m: 9.70...10.00

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600

: 1050 rpm

Del.quantity cm3/: 221.0...224.0 1000 s: (213.0...227.0)

cm3 : 8.00 Spread

1000 s: (12.0)

Aneroid pressure h: 1600

: 800 Speed rpm

Del.quantity cm3/: 235.0...239.0

1000 s: (232.0...242.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 129.0...131.0

1000 s: (126.0...134.0)

Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.70

rpm : 1095...1110 Speed

STARTING FUEL DELIVERY

: 100 rpm

Del.quantity cm3/: 200.0...220.0

1000 s: (196.0...224.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

L28

Note remarks

Test sheet

Edition

: 30.04.92

Replaces

Test oil

: ISO-4113

Combination no.

: 0 402 646 908

Injection pump

Pump designation : PE6P120A320LS7808-10

EP type number

: 0 412 626 850

Governor

Governor design. : RQ300/950PA932-3

Governer no.

: 0 421 801 528

Customer-spec. information

Customer

: MERCEDES-BENZ

Engine

: 0M441 LA

1st version kW

: 249.0

Rated speed

: 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly

: 1 688 901 019

Opening |

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0.8

Test Lines

: 1 680 750 067

Outside diameter

x Wall thickness

x Length mm

: 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 5.20...5.30

: (5.15...5.35)

Firing order

Rack travel in mm : 20.00...21.00

: 6-3-5-2-4-1

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed

rpm: 600

Rack travel in mm : 13.90...14.10

Del.guantity cm3/: 21.4...21.6

100 s: (21.1...21.9)

Spread

cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.7...6.0

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6 Spread

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 600

Aneroid pressure h: 900

: 214.0...216.0 Del.quantity

1000 : (211.0...219.0)

Spread

: 5.00 cm3 1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed

: 600

rpm

Rack travel in mm : 20.0

MO1

Testina: 1st rack travel in: 13.80 Speed rpm : 990...1005 2nd rack travel in: 4.00 rpm : 1065...1095 Speed 4th rack travel in: 1200 Speed rom : 0.00...1.50LOW IDLE 1 Setting point w/out bumper spring rom : 300° Rack travel in mm: 5.8 Testing: : 200 Speed rpm Minimum rack trave: 7.70 Speed rom : 300 Rack travel in mm : 5.70...6.00 Rack travel in mm : 2.00 Speed : 380...420 rpm Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed ווזכייו hPa : 900 Pressure : 13.90...14.10 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 300 Rack travel in m: 11.00...11.20 2nd pressure hPa : 550 Rack travel in m: 13.30...13.50 3rd pressure hPa : 1100 Rack travel in m: 14.10...14.20 4th pressure hPa : 1200 Rack travel in m: 14.50...14.70 5th pressure hPa : -Rack travel in m: 9.40...9.70 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1350 Speed rpm : 950 Del.quantity cm3/: 241.0...243.0 1000 s: (238.0...246.0) Spread cm3 : 8.00 1000 s: (12.0)

Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 bel.quantity cm3/: 145.0...147.0 1000 s: (142.0...150.0) Spread cm3 : 8.00 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.80 Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100

Rack travel in mm : 13.00...13.50

Remarks:

MO2

Aneroid pressure h: 1350

Speed rpm : 800 Del.quantity cm3/: 241.0...246.0

1000 s: (238.0...249.0)

Note remarks

Test sheet

: SCA

Edition

: 22.01.93

Replaces

Test oil

: ISO-4113

Combination no. : 0 402 646 911

Injection pump

Pump designation : PE6P12OA32ORS7138Z

EP type number

: O 412 626 856

Governor

Governor design. : RQ200/1100PA873-1 : 0 421 801 615

Governer no.

Customer-spec. information

: SCANIA

Customer

Engine

: DSC9 07

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 1 688 901 104

Opening

pressure, bar

: 250...253

Orifice plate

diameter mm

: 0,7

Test lines

: 1 680 750 008

Outside diameter

x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 4.40...4.50

: (4.35...4.55)

Rack travel in mm : 9.00...12.00

Firing order

: 1-5-3-6-2-4

Phasing

: 0~60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed

Spread

2nd speed

Spread

rpm: 700

Rack travel in mm : 11.80...11.90

Del.quantity cm3/: 15.0...15.2

100 s: (14.7...15.5)

cm3 : 0.8

100 s: (1.2)

rpm : 250.0

Rack travel in mm: 4.5...4.9 Del.quantity cm3/ : 1.2...1.6

100 s: (-)

cm3 : 0.4

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 600

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Spread

rpm : 700

Aneroid pressure h: 900

Aneroid F. Del.quentity 1000

: 150.0...152.0

: (147.0...155.0)

cm3 : 8.00 1000 : (12.00)

RATED SPEED

1st version

Speed

Setting point: Speed

: 600

rpm Rack travel in mm: 16.5

Testing:

1st rack travel in: 10.80

rpm : 1145...1160

2nd rack travel in: 4.00

Speed rpm : 1290...1320

M03

4th rack travel in: 1400

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

rpm : 250 Rack travel in mm: 4.6

Testina:

Speed rpm : 100 Minimum rack trave: 6.10 rpm : 250

Rack travel in mm : 4.50...4.70

Rack travel in mm: 2.00 Speed rpm : 320...360

Aneroid/Altitude Compensator Test

1st version Setting

Speed ' rpm : 500 Pressure hPa : 900

Rack travel mm : 11.80...11.90

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.90...10.30

2nd pressure hPa : 350

Rack travel in m: 11.50...11.60

3rd pressure hPa : 220

Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 rpm : 1100 Speed

Del.quantity cm3/: 145.0...153.0 1000 s: (143.0...155.0)

Aneroid pressure h: -

: 500 Speed rpm

Del.quantity cm3/: 114.0...118.0 1000 s: (112.0...120.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.80

rpm : 1145...1160 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Rack travel in mm : 9.90...10.30

LOW IDLE

Speed r:pm : 250

Rack travel in mm : 4.50...4.70

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

Start-of-delivery setting with ROBO

diaphragm.

APPLICATION

Omnibus

M₀4

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB 9,6 o Edition : 27.03.92 Replaces : 01.92 Test oil : ISO-4113

Combination no. : 0 402 646 917

Injection pump

Pump designation: PE6P120A320LS7834 EP type number : 0 412 626 841

Governor

Governor design. : RQ300/950PA971 : 0 421 801 543 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M401 LA Engine

1st version kW : 230.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 Prestroke mm

: (5.45...5.65)

Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 14.50...14.70

Del.quantity cm3/: 22.7...22.9

100 s: (22.4...23.2)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm: 6.3...6.9

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 1100

Del.quantity : 227.0...229.0

1000 : (224.0...232.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

rpm : 600 Speed Rack travel in mm: 20.0 Testing:

1st rack travel in: 13.90

rpm : 990...1005 Speed

2nd rack travel in: 4.00

rpm : 1065...1095 Speed

4th rack travel in: 1200

Speed rom : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm: 6.6

Testing:

Speed : 200 rpm

Minimum rack trave: 8.50 : 300 Speed

rpm

Rack travel in mm: 6.30...6.90

Rack travel in mm: 2.00

Speed rpm : 380...420

TORQUE CONTROL

: 0.35 Dimension a mm

rpm : 950 2nd speed

Rack travel in m: 14.90...15.10

rpm : 800 3rd speed

Rack travel in m: 15.20...15.40

Aneroid/Altitude Compensator Test

1st version Setting

: 600 Speed rom Pressure hPa : 1100

Rack travel mm : 14.50...14.70

Measurement

1/min: 600 Speed

1st pressure hPa : 300 Rack travel in m: 10.70...10.90

2nd pressure hPa : 700

Rack travel in m: 13.50,...13.70

3rd pressure hPa : 1400

Rack travel in m: 14.60...14.80

4th pressure hPa : 1550

Rack travel in m: 14.90...15.10

5th pressure hPa : -

Rack travel in m: 10.00...10.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1800

Speed rom : 950 Del.quantity cm3/: 236.0...239.0 1000 s: (233.0...242.0)

cm3 : 8.00 Spread

1000 s: (12.0)

Aneroid pressure h: 1800

Speed rpm : 800 Del.quantity cm3/ : 243.0...247.0

1000 s: (240.0...250.0)

cm3 : 8.00 Spread

1000 s: (12.0)

Aneroid pressure h: -Speed

rpm_ : 500 Del.quantity cm3/: 132.0...134.0

1000 s: (129.0...137.0)

Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.90

rpm : 990...1005 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 30.0...55.0

1000 s: (-)

Rack travel in mm : 10.00...10.30

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

M06

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet Edition : 30.04.92 Replaces Test oil : ISO-4113 Combination no. : 0 402 646 919 Injection pump EP type number : 0 412 626 850 Governor Governor design: RQ300/950PA762-13 : 0 421 801 544 Governer no. Customer-spec. information Customer : MERCEDES-BENZ Engine : 0M441 LA 1st version kW : 250.0 Rated speed : 1900 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Overflow quantity min. 1/h: 100...120 Test nozzle holder : 1 688 901 105 assembly **Opening** pressure, bar : 207...210 Orifice plate

Pump designation: PE6P120A320LS7808-10 diameter mm : 0,8 Test lines : 1 680 750 075 Outside diameter x Wall thickness : 8.00x2.50x1000 x Length mm (A) Injection pump setting values

> Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY Test pressure, bar: 25...27 : 5.20...5.30 Prestroke mm : (5.15...5.35) Rack travel in mm : 20.00...21.00 : 6-3-5-2-4-1 Firina order Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 6 BASIC SETTING rpm: 600 1st speed Rack travel in mm : 14.10...14.30 Del.quantity cm3/: 21.6...21.8 100 s: (21.3...22.1) cm3 : 0.5Spread 100 s: (0.9) 2nd speed rpm : 300.0Rack travel in mm : 5.7...6.0 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5) cm3 : 0.6 Spread 100 s: (1.0) GUIDE SLEEVE POSITION Control-lever position Degree: -2 rpm : 600 Speed Rack travel in mm: 19.20...20.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 600Aneroid pressure h: 750 Del.quantity : 210.0...221.0) : 5.00 1000 : (9.00) RATED SPEED 1st version Setting point:

Speed

rpm : 600

Rack travel in mm: 20.0

Testing: 1st rack travel in: 14.30 rpm : 1090...1105 Speed 2nd rack travel in: 4.00 Speed rpm : 1175...1205 4th rack travel in: 1300 rpm : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring : 300 rpm Rack travel in mm: 5.8 Testing: Speed rpm : 200 Minimum rack trave: 7.70 : 300 rpm Speed Rack travel in mm : 5.70...6.00 Rack travel in mm : 2.00 Speed : 380...420 rpm Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 600 Pressure hPa : 750 Rack travel mm : 14.10...14.30 Measurement Speed 1/min: 600 1st pressure hPa : 200 Rack travel in m: 10.30...10.50 2nd pressure hPa : 500
Rack travel in m: 13.00...13.20
3rd pressure hPa : 950
Rack travel in m: 14.20...14.40 *
4th pressure hPa : 1150 Rack travel in m: 14.80...15.00 5th pressure hPa : -Rack travel in m: 9.20...9.50 START CUT-OUT Speed 1/min : 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1350 rpm_ : 1050 Del.quantity cm3/: 243.0...245.0 1000 s: (240.0...248.0) Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: 1350
Speed rpm: 750
Del.quantity cm3/: 239.0...243.0
1000 s: (236.0...246.0)
Spread cm3: 8.00
1000 s: (12.0)
Aneroid pressure h: -Speed rpm: 500
Del.quantity cm3/: 134.0...136.0
1000 s: (131.0...139.0)
Spread cm3: 8.00
1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 14.30 Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 210.0...230.0 1000 s: (206.0...234.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

80M

BOSCH INJ. PUMP TEST SPECIFICATIONS BEGINNING OF DELIVERY Test pressure, bar: 25...27 Note remarks : 5.20...5.30 Prestroke mm Test sheet : (5.15...5.35) Rack travel in mm : 20.00...21.00 Edition : 30.04.92 Replaces Test oil : ISO-4113 Combination no. : 0 402 646 920 Phasing Injection pump Pump designation: PE6P120A320LS7808-10 Tolerance + - ° EP type number : 0 412 626 850 Governor Time to cyl. no. Governor design. : RQ300/950PA971-1 Governer no. : 0 421 801 547 BASIC SETTING Customer spec. information 1st speed Customer : MERCEDES-BENZ Engine : 04441 LA 1st version kW : 250.0 Rated speed : 1900 TEST BENCH REQUIREMENTS Spread Test oil inlet temp. °C : 38...42 2nd speed Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Spread Overflow quantity min. 1/h: 100...120 GUIDE SLEEVE POSITION Test nozzle holder assembly : 1 688 901 105 Opening. pressure, bar : 207...210 Orifice plate 1st version diameter mm s_0 : Speed Del.quantity Test lines : 1 680 750 075

Firing order : 6-3-5-2-4-1: 0-60-120-180-240-300 : 0.50 (0.75) rom : 600Rack travel in mm : 13.90...14.10 Del.quantity cm3/: 22.1...22.3 100 s: (21.8...22.6) cm3 : 0.5100 s: (0.9) rpm : 300.0Rack travel in mm: 5.7...6.0 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5) cm3 : 0.6100 s: (1.0) Control-lever position Degree: -2 rpm : 600 Rack travel in mm : 19.20...20.80 FULL LOAD DELIV. AT FULL LOAD STOP rpm : 600 Aneroid pressure h: 950 : 221.0...223.0 1000 : (218.0...226.0) Spread : 5.00 cm3 1000 : (9.00) RATED SPEED 1st version Setting point: Speed rpm : 600 Rack travel in mm: 20.0

Outside diameter

x Wall thickness

per values ____

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

x Length mm

: 8.00x2.50x1000

Testing: 1st rack travel in: 14.10 Speed rpm: 990...1005 2nd rack travel in: 4.00 rpm : 1065...1095 Speed 4th rack travel in: 1150 rpm : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring LIDW Rack travel in mm : 5.8 Testing: Speed rpm : 200 Minimum rack trave: 7,70 Speed rpm : 300
Rack travel in mm : 5.70...6.00
Rack travel in mm : 2.00 : 380...420 Speed LDW TORQUE CONTROL 2nd speed rpm : 950 3rd speed : 700 rom Aneroid/Altitude Compensator Test 1st version Setting Speed mar : 600 Pressure hPa : 900 Rack travel mm : 13.90...14.10 Measurement Speed $1/\min : 600$ 1st pressure hPa : 350 Rack travel in m: 10.70...10.90 2nd pressure hPa : 600 Rack travel in m: 12.80...13.00
3rd pressure hPa : 1150
Rack travel in m: 14.20...14.40
4th pressure hPa : 1250 Rack travel in m: 14.70...14.90 5th pressure hPa : -Rack travel in m: 9.20...9.50 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1550 Speed rpm : 950
Del.quantity cm3/: 251.0...254.0
1000 s: (248.0...257.0) Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: 1550

Speed rpm: 750

Del.quantity cm3/: 242.0...246.0

1000 s: (239.0...249.0)

Spread cm3: 8.00

1000 s: (12.0)

Aneroid pressure h:
Speed rpm: 500

Del.quantity cm3/: 138.0...140.0

1000 s: (135.0...143.0)

Spread cm3: 8.00

1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 14.10 Speed rpm : 990...1005

Remarks:

M10

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : DAF 8,7 b Edition : 18.12.91 Replaces : 05.91 Test oil : ISO-4113 Combination no. : 0 402 646 933 Injection pump Pump designation : PE6P120A320RS7228 EP type number : 0 412 626 845 Governor Governor design. : RQ275/1150PA987 Governer no. : 0 421 801 578 Customer-spec. information Customer : DAF Engine : RS 222 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder assembly : 1 688 901 105 Opening pressure, bar : 207...210 Orifice plate diameter mm : 0,8 Test lines : 1 680 750 089 Outside diameter x Wall thickness x Length mm : 8.00x2.50x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ___ BEGINNING OF DELIVERY

Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1 BEGINNING OF DELIVERY DIFFERENCE betw. rack trav. m: 5.50...5.70 & maximum rack tra: 14.2...15.2 Difference ° CS : 3.25...4.75 BASIC SETTING 1st speed rpm: 1000 Rack travel in mm : 14.70...14.80 Del.quantity cm3/: 17.7...17.9 100 s: (17.4...18.2) Spread cm3 : 0.5100 s: (0.9) 2nd speed rpm : 275.0Rack travel in mm: 6.6...6.8 Del.quantity cm3/ : 1.3...1.9 100 s: (1.0...2.2) cm3 : 0.8Spread 100 s: (1.2) GUIDE SLEEVE POSITION Control-lever position Degree: -1 Speed rpm : 550 Rack travel in mm: 15.60...16.40 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1000 Aneroid pressure h: 1000 Del.quantity : 177.0...179.0 1000 : (174.0...182.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED ist version Setting point:

: 550

rpm

Rack travel in mm: 16.0

Prestroke mm

Test pressure, bar: 25...27

Rack travel in mm : 14.20...15.20

: 5.20...5.30

: (5.15...5.35)

Speed

Testing:

1st rack travel in: 13.70

rpm : 1175...1190 Speed

2nd rack travel in: 4.00

rpm : 1260...1290 Speed

4th rack travel in: 1450

rpm : 0.00...1.43 Speed

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 275 Rack travel in mm: 5.6

Testing:

Speed rpm : 100 Minimum rack trave: 7.10

Speed : 275 rpm

Rack travel in mm : 5.50...5.70

Rack travel in mm : 2.00

Speed rpm : 330...370

TORQUE CONTROL

Dimension a mm :-

Torque control curve - 1st version

1st speed rpm : 1000

Rack travel in m: 15.20...15.30

2nd speed rpm : 1150 Rack travel in m: 15.10...15.30

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 600 rpm Pressure hPa : 1000

Rack travel mm : 14.70...14.80

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 12.60...12.80

2nd pressure hPa : 470

Rack travel in m: 13.90...14.00

3rd pressure hPa : 350

Rack travel in m: 13.00...13.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600 Del.quantity cm3/ : 131.0...133.0

1000 s: (128.0...136.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.70

Speed rpm : 1175...1190

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.50...5.70

Remarks:

Start-of-delivery blocking at start of

delivery of cylinder no. 1.

Note remarks

Test sheet

: MB

Edition

: 30.04.92

Replaces

Test oil

: ISO-4113

Combination no. : 0 402 646 943

Injection pump

Pump designation : PE6P120A320S7808-10

EP type number Governor

: 0 412 626 850

Governor design. : RQV300...950PA795-28

Coverner no.

: 0 421 813 925

Customer-spec. information

Customer

: MERCEDES-BENZ

Engine

: 0M441 LA

1st version kW

: 250.0

Rated speed

: 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly

: 1 688 901 105

Opening

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,8

Test lines

: 1 680 750 075

Outside diameter

x Wall thickness

x Length mm

: 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order

: 6-3-5-2-4-1

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed

rpm : 600

Rack travel in mm : 13.90...14.10

Del.quantity cm3/: 22.1...22.3

100 s: (21.8...22.6)

Spread

cm3 : 0.5

100 s: (0.9)

2nd speed

rpm : 300.0

Rack travel in mm: 5.7...6.0

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5) cm3 : 0.6

Spread

100 s: (1.0)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm 2nd speed rpm : 567

: 1.00...1.50

travel mm

: 4.40...4.90 rpm : 780

3rd speed travel mm

: 6.10...6.60

4th speed

rpm

: 1009 : 8.30...8.80

travel mm

5th speed rpm

: 1092

travel mm

: 9.80...10.30

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1090

Rack travel in mm: 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

Speed

1st version Speed rpm : 600 Aneroid pressure h: 950 Del.quantity : 221.0...223.0 1000 : (218.0...226.0) cm3 : 5.00 1000 : (9.00) Spread RATED SPEED 1st version Control lever position degrees: 95...103 Testing: 1st rack travel in: 14.10 rpm : 990...1000 Speed 2nd rack travel in: 4.00 rpm : 1065...1095 Speed 4th rack travel in: 1150 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 69...77 Testing: Speed rpm Minimum rack trave: 7.70 : 300 Speed rom Rack travel in mm : 5.70...6.00 CONSTANT REGULATION Speed rpm : 300...500 Aneroid/Altitude Compensator Test 1st version Setting Speed man : 600 hPa : 900 Pressure Rack travel mm : 13.90...14.10 Measurement 1/min: 600 Speed 1st pressure hPa : 350 Rack travel in m: 10.70...10.90 2nd pressure hPa : 600 Rack travel in m: 12.80...13.00 3rd pressure hPa : 1150 Rack travel in m: 14.20...14.40 4th pressure hPa : 1250 Rack travel in m: 14.70...14.90

1st version Aneroid pressure h: 1550 Speed rpm : 950 Del.quantity cm3/ : 251.0...254.0 1000 s: (248.0...257.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: 1550 Speed rpm : 750 Del.quantity cm3/: 242.0...246.0 1000 s: (239.0...249.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 138.0...140.0 1000 s: (135.0...143.0) cm3 : 8.00 Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 14.10 rpm : 990...1000 Speed STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 210.0...230.0 1000 s: (206.0...234.0)

Remarks:

M14

5th pressure hPa : -

Rack travel in m: 9.20...9.50

FUEL DELIVERY CHARACTERISTICS

Note remarks

Test sheet

Edition : 30.04.92

Replaces

Test oil : ISO-4113

: 0 402 646 944 Combination no.

Injection pump

Pump designation : PE6P120A320LS7808-10

EP type number : 0 412 626 850

Governor

: RQV300...1050PA797 Governor design.

-29

Governer no. : 0 421 813 926

Customer-spec, information

: MERCEDES-BENZ Customer

Engine : 0M441 LA

1st version kW : 250.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.10...14.30

Del.quantity cm3/: 21.6...21.8

100 s: (21.3...22.1)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm: 5.7...6.0

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.00...1.50 2nd speed rpm : 608

travel mm : 4.80...5.30

3rd speed rpm : 820

5.90...6.40 travel mm

: 1108 4th speed man

: 8.30...8.80 travel mm

5th speed rpm : 1183

: 9.60...10.30 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1090

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm : 600 Aneroid pressure h: 750 Del.quantity : 216.0...218.0 1000 : (213.0...221.0) : 5.00 Spread cm31000 : (9.00) RATED SPEED 1st version Control lever position degrees: 118...126 Testing: 1st rack travel in: 14.30 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 Speed rpm: 1175...1205 4th rack travel in: 1300 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 54...62 Testing: Speed rom : 200 Minimum rack trave: 7.70 : 300 nom Rack travel in mm : 5.70...6.00 CONSTANT REGULATION Speed : 300...500 rpm Aneroid/Altitude Compensator Test 1st version Settina : 600 Speed rpm Pressure hPa : 750 : 14.10...14.30 Rack travel mm Measurement Speed 1/min: 600 1st pressure hPa : 200 Rack travel in m: 10.30...10.50 2nd pressure hPa : 500 Rack travel in m: 13.00...13.20 3rd pressure hPa : 950 Rack travel in m: 14.20...14.40 * 4th pressure hPa : 1150

Rack travel in m: 14.80...15.00

Rack travel in m: 9.20...9.50

5th pressure hPa : -

START CUT-OUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1350 Speed rpm : 1050 Del.quantity cm3/ : 243.0...245.0 1000 s: (240.0...248.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 1350 : 750 Speed rpm Del.quantity cm3/: 239.0...243.0 1000 s: (236.0...246.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: -: 500 Speed rpm Del.quantity cm3/: 134.0...136.0 1000 s: (131.0...139.0) cm3 : 8.00 Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 14.30 rpm : 1090...1100 Speed STARTING FUEL DELIVERY Speed man : 100 Del.quantity cm3/: 210.0...230.0 1000 s: (206.0...234.0) Remarks: * Increase in control-rod travel with respect to setting at least 0.1 mm

Note remarks

Test sheet : UNI 13,8 h2 : 05.10.92 Edition

Replaces : 07.92 Test oil : ISO-4113

Combination no. : 0 402 646 947

Injection pump

Pump designation : PE6P130A720RS7225 EP type number : 0 412 636 817

Governor

Governor design. : RQV300...950PA1002

-1K

Governer no. : 0 421 815 280

Customer-spec. information Customer : IVECO-UNIC

: 8210.42.400 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15)

Rack travel in mm : 13.50...14.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.90...6.10 & maximum rack tra: 12.5...13.5 Difference * CS : 1.25...2.75

BASIC SETTING

rpm: 900 1st speed

Rack travel in mm : 13.00...13.10

Del.quantity cm3/: 31.3...31.5

100 s: (31.0...31.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm: 4.0...4.4 Del.quantity cm3/: 1.9...2.5

100 s: (1.6...2.8) Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 995 1st speed

: 8.50...8.70 travel mm rpm : 300 2nd speed

travel mm

: 1.00...1.40 rpm : 500

3rd speed

: 3.30...3.90 travel mm

rpm : 750 4th speed

: 5.80...6.20 travel mm

1300 5th speed rpm

: 13.00...14.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1125 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm : 900 Aneroid pressure h: 900 Del.quantity : 313.0...315.0 1000 : (310.0...318.0) cm3 : 5.00Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 112...120 Testing: 1st rack travel in: 12.00 rpm : 990...1000 Speed 2nd rack travel in: 4.00 rpm : 1100...1130 Speed 4th rack travel in: 1300 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 66...74 Testing: Speed rpm : 100 Minimum rack trave: 5.70 Speed : 300 rem Rack travel in mm : 4.00...4.40 CONSTANT REGULATION rpm : 340...460 Speed TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version rpm : 900 1st speed Rack travel in m: 13.00...13.10 2nd speed rpm : 700 Rack travel in m: 12.70...12.90

3rd speed rpm : 550

Rack travel in m: 12.00...12.20 : 300 4th speed rpm Rack travel in m: 11.20...11.70 Aneroid/Altitude Compensator Test 1st version Setting Speed : 900 rom Pressure hPa : 900 Rack travel mm : 13.00...13.10 Measurement $1/\min : 900$ Speed

1st pressure hPa : -Rack travel in m: 8.30...8.50 2nd pressure hPa : 580 Rack travel in m: 11.90...12.00 3rd pressure hPa : 300 Rack travel in m: 9.30...9.70 START CUT-OUT Speed 1/min: 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 : 550 rpm Del.quantity cm3/: 286.0...292.0 1000 s: (283.0...295.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 148.0...150.0 1000 s: (145.0...153.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.00 rpm : 990...1000 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 135.0...165.0 1000 s: (131.0...169.0) LOW IDLE Speed rpm : 300 Rack travel in mm : 4.00...4.40 Del.quantity cm3/: 19.0...25.0 1000 s: (16.0...28.0) cm3 : 8.00 Spread 1000 s: (12.00) Remarks:

M18

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11.7 n1 : 23.10.92 Edition

Replaces Test oil : ISO-4113

Combination no. : 0 402 646 949

Injection pump

Pump designation : PE6P120A320RS7230Z

EP type number : 0 412 626 848

Governor

Governor design. : RQV250...1000PA990K

: 0 421 815 274 Governer no.

Customer-spec. information

Customer : DAF

Engine : WS 295 G

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 089

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10

: (4.95...5,15)

Rack travel in mm : 14.00...15.00

: 02.92

BASIC SETTING

Phasing

Firing order

Tolerance + - °

rpm: 980 1st speed

Rack travel in mm : 13.70...13.80

Del.guantity cm3/: 25.4...25.6

100 s: (25.1...25.9)

: 0.50 (0.75)

: 1-5-3-6-2-4

: 0-60-120-180-240-300

cm3 : 0.5Spread

100 s: (0.9)

rpm : 250.0 2nd speed Rack travel in mm: 5.8...6.0 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3)

cm3 : 0.8Spread 100 s: (1,2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

: 1.30...1.70 travel mm

rpm : 285 2nd speed

: 2.10...2.50 travel mm

rpm : 1030 3rd speed

: 9.60...10.00 travel mm

rpm : 1145 4th speed

: 11.20...11.40 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1070

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 980 Aneroid pressure h: 1500

Del.quantity : 254.0...259.0)

: 5.00 Spread cm3

1000 : (9,00)

RATED SPEED

M19

1st version Control lever

position degrees: 117...125

Testing:

1st rack travel in: 12.70

rpm : 1030...1040 Speed

2nd rack travel in: 4.00

Speed rpm : 1135...1165 4th rack travel in: 1275

Speed rpm : 0.00...1.40

LOW IDLE 1 Control lever

position degrees: 67...75

Testing:

Speed rpm Minimum rack trave: 7.00 : 250 Speed rpm

Rack travel in mm : 5.10...5.30

Rack travel in mm : 2.00

Speed : 320...360 rom

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

rpm : 500 1st speed

Rack travel in m: 12.30...12.40

: 550 2nd speed מוכרו

Rack travel in m: 12.30...12.50

3rd speed rpm : 750

Rack travel in m: 12.90...13.00

4th speed rpm : 850

Rack travel in m: 14.00...14.20

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed : 980 man hPa : 1500 Pressure

: 13.70...13.80 Rack travel mm

Measurement

1/min: 980 Speed

1st pressure hPa : -

Rack travel in m: 8.00...8.20 2nd pressure hPa : 380

Rack travel in m: 10.80...10.90

3rd pressure hPa : 150

Rack travel in m: 9.10...9.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500 Speed rpm

Del.quantity cm3/: 267.0...271.0

1000 s: (264.0...274.0)

cm3 : 8.00 Spread 1000 s: (12.0)

Ameroid pressure h: -

Speed rpm : 600 Del.quantity cm3/ : 143.0...145.0

1000 s: (140.0...148.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.70

Speed rpm : 1030...1040

LOW IDLE

Speed rpm : 250

Rack travel in mm : 5.10...5.30

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB

: 30.04.92 Fdition |

Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 950

Injection pump

Pump designation : PE6P120A320LS7837-10

EP type number : 0 412 626 855

Governor

Governor design. : RQ300/950PA993-2

Governer no. : 0 421 801 590

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M441 LA

1st version kW : 250.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values __

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.70...14.90

Del.quantity cm3/: 23.3...23.5

100 s: (23.0...23.8)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 300.0Rack travel in mm: 6.2...6.8 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 1000

Del.quantity : 233.0...235.0

1000 : (230.0...238.0) cm3 : 5.00

Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed Rack travel in mm: 20.0 Testing:

1st rack travel in: 14.70

rpm : 990...1005 Speed

2nd rack travel in: 4.00

rpm : 1065...1095 Speed

4th rack travel in: 1200

rpm : 0.00...1.50Speed

LOW IDLE 1

Setting point w/out bumper spring

: 300 Speed rpm Rack travel in mm: 6.5

Testina:

Speed rpm : 200 Minimum rack trave: 8.30

rpm : 300 Speed

Rack travel in mm : 6.20...6.80

Rack travel in mm : 2.00 Speed rpm : 380...420

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 600 rpm Pressure hPa : 1000

Rack travel mm : 14.70...14.90

Measurement

Speed $1/\min : 600$

1st pressure hPa : 200

Rack travel in m: 9.80...10.00

2nd pressure hPa : 600

Rack travel in m: 13.50...13.70 3rd pressure hPa : 1250 Rack travel in m: 14.80...15.00

4th pressure hPa : 1450 Rack travel in m: 15.40...15.60

5th pressure hPa

Rack travel in m: 9.50...9.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1800

Speed rpm : 950 Del.quantity cm3/ : 251.0...254.0

1000 s: (248.0...257.0)

Spread

Aneroid pressure h: 1800

Speed rpm : 800

Del.quantity cm3/: 250.0...254.0 1000 s: (247.0...257.G)

cm3 : 8.00 Spread

1000 s: (12.0)

Aneroid pressure h: -

: 500 Speed rom Del.quantity cm3/: 135.0...137.0 1000 s: (132.0...140.0)

Spread cm3 : 8.00

1000 s: (12.0)

EREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.70

rpm : 990...1005 Speed

STARTING FUEL DELIVERY

Speedi : 100 mom

Del.quantity cm3/: 240.0...260.0

1000 s: (236.0...264.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

cm3 : 8.00

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 9,6 o 5 Edition | : 30.04.92 Replaces : 03.92

Test oil : ISO-4113

Combination no. : 0 402 646 955

Injection pump

Pump designation: PE6P12OA32OLS7834-1

EP type number : 0 412 626 857

Governor

Governor design. : RQV350...1050PA866

-13

: 0 421 813 954 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M401 LA

: 230.0 1st version kW Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke m : 5.50...5.60 : (5.45...5.65)

Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1 Firing order

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no.

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.60...14.80

Del.quantity cm3/: 22.2...22.4

100 s: (21.9...22.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm: 5.1...5.7

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6Spread 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rom : 350

: 1.30...1.80 travel mm

rpm : 570 2nd speed

: 3.30...3.80 travel mm

rpm : 900 3rd speed

: 5.40...5.90 travel mm

rpm : 1107 4th speed

travel mm : 7.80...8.30

5th speed rpm : 1204

: 9.80...10.30 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1130 Speed

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

3rd pressure hPa : 1350 1st version Rack travel in m: 14.70...14.90 Speed rpm : 600 4th pressure hPa : -Aneroid pressure h: 900 Rack travel in m: 10.00...10.30 : 222.0...224.0 Del.quantity 1000 : (219.0...227.0) START CUT-OUT : 5.00 Spread cm31000 : (9.00) 1/min: 270 (290) Speed RATED SPEED FUEL DELIVERY CHARACTERISTICS 1st version Control lever 1st version position degrees: 117...125 Aneroid pressure h: 1800 Speed : 1050 rpm Del.quantity cm3/: 234.0...237.0 1000 s: (231.0...240.0) Testina: 1st rack travel in: 13.70 rpm : 1090...1100 Speed cm3 : 8.00 Spread 2nd rack travel in: 4.00 1000 s: (12.0) rpm : 1160...1190 Speed Aneroid pressure h: 1800 4th rack travel in: 1300 Speed : 800 rom Speed rom : 0.00...1.00Del.quantity cm3/: 241.0...245.0 1000 s: (238.0...248.0) LOW IDLE 1 cm3 : 8.00 Spread 1000 s: (12.0) Control lever Aneroid pressure h: 1800 position degrees: 63...71 Speed rpm : 1050 Del.quantity cm3/ : 175.0...179.0 * Testing: Speed : 200 1000 s: (172.0...182.0) r'pm Minimum rack trave: 7.30 cm3 : 8.00Spread : 350 1000 s: (12.0) rom Rack travel in mm : 5.10...5.70 Aneroid pressure h: -Speed : 500 rom CONSTANT REGULATION Del.quantity cm3/: 132.0...134.0 rom : 350...600 Speed 1000 s: (129.0...137.0) Spread cm3 : 8.00TORQUE CONTROL 1000 s: (12.0) Dimension a mm : 0.40 nd speed rpm : 1050 Rack travel in m: 14.80...15.00 2nd speed BREAKAWAY 3rd speed : 800 rpm Rack travel in m: 15.20...15.40 1st version 1mm rack travel less than Aneroid/Altitude Compensator Test full load rack tr: 13.70 Speed rpm : 1090...1100 1st version STARTING FUEL DELIVERY Setting Speed : 600 rpm Pressure : 900 Speed hPa rpm : 100 : 14.60...14.80 Rack travel mm Del.quantity cm3/: 250.0...270.0 1000 s: (246.0...274.0) Measurement Speed $1/\min : 600$ Remarks: 1st pressure hPa : 300 Rack travel in m: 11.40...11.60 * = Set at reduced-delivery stop. 2nd pressure hPa : 600

Rack travel in m: 13.40...13.60

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 9,6 0 7
Edition : 30.04.92
Replaces : 03.92
Test oil : ISO-4113

Combination no. : 0 402 646 961

Injection pump

Pump designation : PE6P120A320LS7834-1

EP type number : 0 412 626 857

Governor

Governor design. : RQV350...950PA866-14

Governer no. : 0 421 813 959

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M4D1 LA

1st version kW : 213.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60

: (5.45...5.55)

Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ}$: 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.30...14.50

Del.quantity cm3/: 20.9...21.1

100 s: (20.6...21.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 5.6...6.2 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.30...1.80

2nd speed rpm : 424

travel mm : 2.30...2.80

3rd speed rpm: 700

travel mm : 4.10...4.60

4th speed rpm: 1008

travel mm : 7.90...8.40

5th speed rpm : 1220

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm: 985

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm : 600 Aneroid pressure h: 900 Del.quantity : 209.0...211.0 1000 : (206.0...214.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 111...119 Testina: 1st rack travel in: 13.80 Speed rpm : 990...1000 2nd rack travel in: 4.00 rom : 1065...1095 Speed 4th rack travel in: 1250 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 63...71 Testing: Speed rom : 200 Minimum rack trave: 7.30 : 350 rom Rack travel in mm : 5.10...5.70 CONSTANT REGULATION Speed rpm : 350...600 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rom Pressure hPa : 900 : 13.30...13.50 Rack travel mm Measurement 1/min : 600Speed 1st pressure hPa : 300 Rack travel in m: 9.80...10.00 2nd pressure hPa : 550 Rack travel in m: 12.30...12.50 3rd pressure hPa : 1300 Rack travel in m: 13.70...13.90 4th pressure hPa : -Rack travel in m: 9.90...10.20

FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1600 Speed rpm : 950 Del.quantity cm3/ : 228.0...231.0 1000 s: (225.0...234.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: 1600 : 800 Speed rom Del.quantity cm3/: 230.0...234.0 1000 s: (227.0...237.0) Spread cm3 : 8.001000 s: (12.0)

1000 s: (12.0)
Aneroid pressure h: 1600
Speed rpm : 950
Del.quantity cm3/: 169.0...173.0 *
1000 s: (166.0...176.0)

Spread cm3 : 8.00 1000 s: (12.0)

Aneroid pressure h: -Speed rpm : 500

Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0)

Spread cm3 : 8.00 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.80 Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm: 100

Del.quantity cm3/: 240.0...260.0 1000 s: (236.0...264.0)

Remarks:

* = Set at reduced-delivery stop.

Speed 1/min: 270 (290)

BOSCH INJ. PUMP TEST SPECIFICATIONS : 1-5-3-6-2-4 Firing order Note remarks Test sheet : 0-60-120-180-240-300 : DAF Phasing : 22.01.93 Edition Replaces : 10.92 Tolerance $+ - ^{\circ} : 0.50 (0.75)$ Test oil : ISO-4113 Time to cyl. no. : 1 Combination no. : 0 402 646 984 BEGINNING OF DELIVERY DIFFERENCE Injection pump Pump designation : PE6P120A320RS7248 betw. rack trav. m: 4.90...5.10 EP type number : 0 412 626 861 & maximum rack tra: 11.7...12.7 Governor Difference ° CS : 2.25...3.75 Governor design. : RQ275/1150PA987 : 0 421 801 578 Governer no. BASIC SETTING Customer-spec. information 1st speed rpm: 1000 : DAF Customer Rack travel in mm : 12.20...12.30 Engine : RS 222 L Del.quantity cm3/: 18.4...18.6 TEST BENCH REQUIREMENTS 100 s: (18.1...18.9) Test oil inlet temp. °C : 38...42 Spread cm3 : 0.5Overflow valve 100 s: (0.9) : 1 417 413 025 2nd speed rpm : 275.0 Rack travel in mm : 5.3...5.5 Del.quantity cm3/ : 1.3...1.9 100 s: (1.0...2.2) Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 105 assembly Spread cni3 : 0.8 100 s: (1.2) Opening : 207...210 pressure, bar GUIDE SLEEVE POSITION Control-lever position Orifice plate Degree: -1 Speed rpm : 550 Rack travel in mm : 15.20...16.40 diameter mm : 0,8 Test Lines : 1 680 750 089 FULL LOAD DELIV. AT FULL LOAD STOP Outside diameter 1st version x Wall thickness Speed rpm : 1000 x Length mm : 8.00x2.50x600 Aneroid pressure h: 1000 : 186.0...188.0 Del.quantity 1000 : (183.0...191.0) (A) Injection pump setting values Insp. values in parentheses cm3 : 5.00 Spread Set equal delivery quant. 1000 : (9.00) per values _ RATED SPEED BEGINNING OF DELIVERY Test pressure, bar: 25...27 1st version Prestroke mm : 5.20...5.30 Setting point: : (5.15...5.35) Speed rom : 550 Rack travel in mm : 12.00...13.00 Rack travel in mm : 15.8

M27

Testina:

1st rack travel in: 11.20

rpm : 1200...1216 Speed

2nd rack travel in: 4,00

Speed rpm : 1275...1305 4th rack travel in: 1450

rpm : 0.00...1.40 Speed

LOW IDLE 1

Setting point w/out bumper spring

rpm : 275 Rack travel in mm: 4.7

Testina:

Speed rpm : 175 Minimum rack trave: 7.00 rpm : 275 Speed Rack travel in mm : 4.60...4.80

Rack travel in mm: 2.00 rpm : 320...360 Speed

Aneroid/Altitude Compensator Test

1st version Setting

: 600 Speed rpm hPa : 1000 Pressure

Rack travel mm : 12.20...12.30

Measurement

Speed 1/min : 600

1st pressure hPa : -

Rack travel in m: 9.30...9.50

2nd pressure hPa : 420

Rack travel in m: 11.60...11.70 3rd pressure hPa : 240

Rack travel in m: 10.30...10.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600 Del.quantity cm3/ : 121.0...123.0 1000 s: (118.0...126.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.20

rpm : 1200...1215 Speed

LOW IDLE

rpm : 275 Speed

Rack travel in mm : 4.60...4.80

Remarks:

M28

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF

: 23.10.92 Edition : 07.92 Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 991

Injection pump

Pump designation : PE6P12OA32ORS7218Y

EP type number : 0 412 626 859

Governor

Governor design. : RQV275...1000PA939-2

Governer no. : 0 421 813 986

Customer-spec. information Customer : DAF

Engine : WS 222 L

TEST BENCH REQUIREMENTS

Test oil

inlet temp. "C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0.8

Test Lines : 1 680 750 089

Outside diameter

x Wall thickness

: 8.00x2.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.30...5.40

: (5.25...5.45)

Rack travel in mm : 13.00...14.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10 & maximum rack tra: 13.2...14.2 Difference ° CS : 2.25...3.75

Difference ° CS

BASIC SETTING

rpm: 850 1st speed

Rack travel in mm : 13.80...13.90

Del.quantity cm3/: 19.8...20.0

100 s: (19.5...20.3)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 275.0 Rack travel in mm: 6.2...6.6 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275

: 1.25...1.45 travel mm

2nd speed rpm : 301

travel mm 1.50...2.00

3rd speed rpm : 351

travel mm : 2.30...2.80

4th speed rpm : 676

: 4.25...4.75 travel mm

5th speed rpm : 1058

travel mm : 7.95...8.15

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1150 Speed

Rack travel in mm : 11.40...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

NO1

1st version Speed rpm : 850 Aneroid pressure h: 1000 Del.quantity : 190.0...203.0) : 5.00 cm3 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 115...123 Testing: 1st rack travel in: 12.80 rpm : 1040...1050 2nd rack travel in: 4.00 rpm : 1145...1175 Speed 4th rack travel in: 1250 rpm : 0.00...1.40Speed LOW IDLE 1 Control lever position degrees: 78...86 Testing: Speed : 175 rpm Minimum rack trave: 6.50 rpm : 275 Rack travel in mm : 4.90...5.10 CONSTANT REGULATION Speed rpm : 300...350 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rpm Pressure hPa : 1000 Rack travel mm : 13.80...13.90 Measurement 1/min: 600 Speed 1st pressure hPa : -Rack travel in m: 11.50...11.70 2nd pressure hPa : 400 Rack travel in m: 13.20...13.30 3rd pressure hPa : 230 Rack travel in m: 12.00...12.20 FUEL DELIVERY CHARACTERISTICS

Speed rpm : 600
Del.quantity cm3/: 139.0...141.0
1000 s: (136.0...144.0)
BREAKAWAY

1st version 1mm rack travel less than full load rack tr: 12.80

Speed rpm : 1040...1050

TOM IDTE

Speed rpm : 275
Rack travel in mm : 4.90...5.10

Remarks:

NO2

1st version

Aneroid pressure h: -

AFB/AFB BOSCH-INJ.-PUMP TEST SPECIFICATIONS valve Volt: 12 Shutoff Note inst. in remarks column electromagnet Volt: 12 Test scheet : OPE Supply-pump pressure Edition : 07.93 replaces 1/min: 1000 Speed Charge press hPa: 1000 Setting value bar: 4.20...4.80 Calibrating oil : ISO-4113 Injection pump : VE4/10F2150L489 KSB/AFB Type number : 0 460 404 074 valve Volt: 12 Customer Part-No. : Shutoff electromagnet Volt: 12 Customer-specific information Full-load del. with charge press.: Customer : OPEL 1/min: 1200 Speed : 2,3 DTR Engine Charge press. hPa: 1000 Del. quantity cm3/ Power KW: 74 1000s.: 62.50...63.50 KSB/AFB TEST BENCH REQUIREMENTS Volt: 12 valve Shutoff Overflow restricti: 1 463 456 303 electromagnet Volt: 12 Dispersion cm3/: 3.0 Calibrating-oil 1000s.: (3.0) return temp. with thennometer : 40.00...48.00 Full-load del. w/out charge press.: Electronically : 42.00...50.00 Speed 1/min: 500 Inlet press., bar : 0.30...0.40 Del. quantity cm3/ 1000s.: 40.50...41.50 Calibrating nozzle-holder 11 KSB/AFB assembly : 1 688 901 000 valve Volt: 12 Shutoff Openina electromagnet Volt: 12 Pressure bar: 147.00...150.00 Low-idle speed regulation Test inj. tubing : 1 680 750 017 1/min: 290 Speed Del. quantity cm3/ Outside diameter : 6.00 1000s.: 13.50...17.50 x Wall thickness : 2.00 KSB/AFB valve x Length mm: 840 Voit: 12 Shutoff Start of delivery electromagnet Volt: 12 Del. quantity cm3/: 3.0 Indicator setting 1000s.: (3.0) Piston stroke mm: 1.0 Outlet : A Full-load speed regulation Injection-pump setting values Speed 1/min: 2500 Test specifications in parentheses Charge press hPa: 1000 Del. quantity cm3/ Timing-device travel 1000s.: 15.00...21.00 KSB/AFB Speed 1/min: 1000 Volt: 12 valve Charge press. hPa: 1000 Shutoff Setting value mm: 2.70...3.10 electromagnet Volt: 12

NO3

		+	Shutoff	
Start:		+	electromagnet Volt:	
		+	9th speed 1/min:	300A
Speed 1/min		+	Charge press. hPa:	1000
Del. quantity cm3/		+	TD travel mm:	1.503.50
	: 37.00	+		(1.303.70)
KSB/AFB		+	KSB/AFB	
Valve Volt	: 12	+	valve Volt:	-
Shutoff		+	Shutoff	
electromagnet Volt	: 12	+	electromagnet Volt:	12
		+	10th speed 1/min:	800B
Load-dependent sta	rt of delivery:	+		1000
Injqty.dif.measu	rement:	+		3.606.00
		+		(3.006.60)
Speed 1/min	: 1000	1	KSB/AFB	
Charge press hPa	: Z ÷	+	valve Volt:	_
Inj.—qty. cm3/	•	1	Shutoff	
difference 1000s.	: 22.0024.00	1	electromagnet Volt:	12
KSB/AFB		1	cecot onagnee voce.	16
valve Volt	: 12	1	Supply-pump pressur	e characteristic
Shutoff		1	eappey pand pressur	c character istre.
electromagnet Volt	· 12	1	1st speed 1/min:	2100
TD-travel dif.meas		1		1000
correttore anticip		\mathbf{I}	Supply-pump	1000
1.Speed 1/min		T		6.907.50
Charge press hPa		T	pressure bar: KSB/AFB	0.907.50
TD-travel	. <i>L</i> '	T		10
	: 1.201.40	T	valve Volt: Shutoff	12
KSB/AFB	. 1.201.40	T		45
valve Volt	. 10	Ť	electromagnet Volt:	
	: 12	+	2nd speed 1/min:	
Shutoff	13	+		1000
electromagnet Volt	: 12	+	Subbfa-brimb	
		+		4.204.80
Inspection pump te	st specifications	+	KSB/AFB	
Test specification	s in parentheses	+	valve Volt:	12
		+	Shutoff	
Timing-device char	acteristic:	+	electromagnet Volt:	
		+	3rd speed 1/min:	
	: 2100	+	Charge press. hPa:	1900
	: 1000	+	Supply-pump	
	: 8.309.10	+	pressure bar:	3.704.30
	: (8.009.40)	+	KSB/AFB	
KSB/AFB		+	valve Volt:	12
valve Volt	: 12	+	Shutoff	
Shutoff	-	+	electromagnet Volt:	12
electromagnet Volt	: 12	+	4th speed 1/min:	300
3rd speed 1/min	: 1000	+	Charge press. hPa:	1000
Charge press hPa	: 1000	+	Supply-pump	
TD travel mm	: 2.703.10	+		4.204.80
mm	: (2.203.60)	+	KSB/AFB	
KSB/AFB		1	valve Volt:	_
valve Volt	: 12	1	Shutoff	
Shutoff		+	electromagnet Volt:	12
electromagnet Volt	: 12	1	occording, to botto	
4th speed 1/min		1	Overlow quantity at	overflow valve.
	1000	1	The same same is the same	STOLLEGE FOLVE.
	1.302.10	1	1st speed 1/min:	500
	(1.002.40)	1	Charge press. hPa:	
KSB/AFB		1	KSB/AFB	
valve Volt	• 12	\mathbf{I}	valve Voit:	12
VO(C	· , -	T	AMEAC AOLE.	16

NO4

Shutoff	+	KSB/AFB	
electromagnet Volt: 12	+	valve Volt:	12
	.7083.40	Shutoff	
quantity cm3/10s: (26	6.7098.40) \downarrow	electromagnet Volt:	12
2nd speed 1/min: 215	50 🗼	Del. quyntity cm3/:	
Charge press. hPa: 100	00		(60.7065.30)
KSB/AFB		18th speed 1/min:	
valve Volt: 12	1	Charge press. hPa:	
Shutoff	1	KSB/AFB	
electromagnet Volt: 12	1	valve Volt:	12
Overflow : 55.	.60139.00	Shutoff	16
quantity cm3/10s: (40		electromagnet Volt:	12
qualities the rost to	<u> </u>	Del. quantity cm3/:	
Delivery-quant. and bre	aakaway char :	1000e •	(38.7043.30)
beetivery quarter and bre	canaday chai	10003	(30.7043.30)
	Ţ	Mech. shutoff:	
1nd speed 1/min: 800	<u>.</u> T	Mech. Shutoff:	
		51 1 1 - 1 - 55	
Charge—air pressure—set		Electr. shutoff:	
point hPa: 500	·		
KSB/AFB	†	1st speed 1/min:	
valve Volt: 12	+	Del. quantity cm3/:	0.003.00
Shutoff	+		(0.003.00)
electromagnet Volt: 12	+	Shutoff	
Del. quantity cm3/: 55.		electromagnet volt:	•••
1000s.: (53	3.0059.00)	KSB/AFB	
2nd speed 1/min: 270	00	valve Volt:	-
Charge press. hPa: 100	00 🗼		
KSB/AFB	4	Idle delivery:	
valve Volt: 12	1	2210 200170170	
Shutoff	1	1st speed 1/min:	290
electromagnet Volt: 12	1	KSB/AFB	270
Del. quantity cm3/: 0.0	m. 3.m	valve Voit:	12
10005.: (0.	00 3 00)	Shutoff	16
5th speed 1/min: 250	Γ	electromagnet Volt:	12
Charge press. hPa: 100			
KSB/AFB	~ T	Del. quantity cm3/:	(14 50 40 50)
valve Volt: 12	7		(11.5019.50)
Shutoff	Ť	Dispersion cm3/:	
	†	1000s.:	
electromagnet Volt: 12	77 74 70	2nd speed 1/min:	380
Del. quantity cm3/: 15.	.0021.00	KSB/AFB	4.00
10005.: (14	.0022.00) +	valve Volt:	12
8th speed 1/min: 230		Shutoff	
Charge press. hPa: 100)U +	electromagnet Volt:	
KSB/AFB	+	Del. quantity cm3/:	0.003.00
valve Volt: 12	- -		(0.003.00)
Shutoff	+	3rd speed 1/min:	320
electromagnet Volt: 12	+	KSB/AFB	
Del. quantity cm3/: 35.0	.0043.00	valve Volt:	12
1000s.: (33	3.0045.00)	Shutoff	
9th speed 1/min: 215	50 4	electromagnet Volt:	12
Charge press. hPa: 100		Del. quantity cm3/:	
KSB/AFB			(6.5013.50)
valve Volt: 12	1	10000	(0.5015.50)
Shutoff	Γ	Load-dependent star	t of dolivery
electromagnet Volt: 12	I	Injqty.dif.measure	
Del. quantity cm3/: 49.	80 52 20 T	ing. quy.un.measure	EIINEI I L.
	3.7053.30)	1st speed 1/m²	1000
12th speed 1/min: 120		1st speed 1/min:	
		Charge press. hPa:	
Charge press. hPa: 100	~ †	Inj.—qty. cm3/ :	22.0024.00

KSB/AFB KSB/AFB Volt: 12 valve valve Volt: 12 Shutoff Shutoff electromagnet Volt: 12 Del. quantity cm3/: 37.00...39.00 L 1000S.: (30.00...46.00) electromagnet Volt: 12 1/min: 1000 5th speed Charge press. hPa: Z #
Inj.-qty. cm3/: 2.00...3.00 difference 1000s.: (2.00...8.00) Shutoff electromagnet: KSB/AFB valve Volt: 12 Cut-in Shutoff min voltage : 10.0 electromagnet Volt: 12 Rated voltage : 12.0 TD-travel dif.measurement: Mounting and assembly dimensions: correttore anticipo iniezione (SV): 1st speed 1/min: 1000 Charge press. hPa: Z + TD-travel : 1.20...1.40 Designation K mm: -KF mm: 5.8...6.2 difference mm: (1.20...1.40) mm: 1.1...1.5 MS KSB/AFB SVS max. mm: 4.6 Volt: 12 valve mm: 37.9...39.9 Υa Shutoff mm: 39.2...44.8 Yb electromagnet Volt: 12 1/min: 1000 4th speed Remarks: Charge press. hPa: Z # Operate control lever after each : 0.50...1.10 TD-travel manifold-pressure compensator pressure difference mm: (0.50...1.10)change. KSB/AFB valve Volt: 12 * Correction at adjusting nut Shutoff electromagnet Volt: 12 A = KSB adjustment point Automatic starting fuel delivery: B = KSB curve point 1/min: 250 1st speed KSB/AFB valve Volt: 12 Overflow restriction 0.55 mm - Part No. Shutoff ..303 electromagnet Volt: 12 Dei. quantity cm3/: 53.00...63.00 Z = Absolute delivery 1000s.: (50.00...66.00) Starting delivery check V = Speed-control lever in full-load 1/min: 400 2nd speed KSB/AFB position valve Volt: 12 Shutoff Starting delivery check electromagnet Volt: 12 L = Speed-control lever in idle Del. quantity cm3/: 40.00...50.00 position 1000s.: (40.00...50.00) Ya = Distance between VE flange and 3rd speed 1/min: 100 KSB/AFB speed-control lever in idle valve Volt: 12 Shutoff position electromagnet Volt: 12 Del. quantity cm3/: 57.00...59.00 V Yb = Distance between VE flange and 1000s.: (50.00...66.00) speed-control lever in rated speed 1/min: 100 4th speed position

Measurement point = edge of control lever on distributor-head end BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test scheet : SOF Edition : 07.93

replaces

Calibrating oil : ISO-4113

: VE4/10F2100R518 Injection pump Type number : 0 460 404 077

Customer Part-No. :

Customer-specific information Customer : IVECO-SOFIM

Engine : 8140.67.2200

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating oil return temp.

with thermometer : 40.00...48.00 : 42.00...50.00 Electronically

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 022 assembly

Openina

bar: 130.00...133.00 Pressure

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 450

Start of delivery

Prestroke mm: 0.2

(from BDC): +-0.02(0.04)

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1000 Speed

Setting value mm: 0.90...1.10

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1000 Speed

Setting value bar: 4.70...5.30

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 1500

Del. quantity cm3/ 1000s.: 42.50...43.50

Shutoff

electromagnet Volt: 12 cm3/: 3.0 Dispersion 1000s.: (3.0)

Low-idle speed regulation

- 1/min: 375 Speed

bel. quantity cm3/

1000s.: 12.00...16.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.0 1000s.: (3.0)

Full-load speed regulation

1/min: 2300 Speed

Del. quantity cm3/

1000s.: 25.00...29.00

Shutoff

electromagnet Volt: 12

Start:

Speed 1/min: 100

Del. quantity cm3/: 65.00...105.00

1000s.: 65.00 mind

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

Speed 1/min: 1000 Charge press hPa: 12 Inj.-qty. cm3/

difference 1000s.: -15.0...-21.00#

Shutoff

electromagnet Volt: 12 TD-travel dif.measurement

correttore anticipo iniezione (SV)

1/min: 1000 1.Speed

TD-travel

difference mm: -0.4...-0.60#

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:	Del. quantity cm3/: 0.003.00 1000S.: (0.003.00)
1st speed 1/min: 1800	+ 5th speed 1/min: 2300 + Shutoff
TD travel mm: 6.106.70	+ electromagnet Volt: 12
mm: (5.707.10)	+ Del. quantity cm3/: 25.0029.00
electromagnet Volt: 12	10005.: (21.0033.00)
3rd speed 1/min: 1000	+ 9th speed 1/min: 2100
TD travel mm: 0.901.10	+ Shutoff
mm: (0.401.60) Shutoff	+ electromagnet Volt: 12
electromagnet Volt: 12	+ Del. quantity cm3/: 42.0045.00 + 1000s.: (41.0046.00)
5th speed 1/min: 2100	12th speed 1/min: 1500
TD travel mm: 6.907.70	+ Shutoff
mm: (6.608.00)	+ electromagnet Volt: 12
Shutoff	+ Del. quyntity cm3/: 42.5043.50
electromagnet Volt: 12	+ 1000s.: (41.0045.00)
6th speed 1/min: 1500 TD travel mm: 4.204.80	15th speed 1/min: 1000
mm: (3.805.20)	+ Shutoff + electromagnet Volt; 12
Shutoff	Del. quantity cm3/: 39.5042.50
electromagnet Volt: 12	+ 1000s.: (38.5043.50)
•	+ 20th speed 1/min: 600
Supply-pump pressure characteristic:	+ Shutoff
4	+ electromagnet Volt: 12
1st speed 1/min: 2100	+ Del. quantity cm3/: 34.5038.50
Supply-pump pressure bar: 8.509.10	1000s.: (33.5039.50)
pressure bar: 8.509.10 Shutoff	Mech. shutoff:
electromagnet Volt: 12	Thech. Shatori.
2nd speed 1/min: 1000	+ Electr. shutoff:
Supply-pump	+
pressure bar: 4.705.30	1st speed 1/min: 375
Shutoff	+ Del. quantity cm3/: 0.003.00
electromagnet Volt: 12 3rd speed 1/min: 600	1000s.: (0.003.00) + Shutoff
Supply-pump	+ electromagnet volt: -
pressure bar: 3.203.80	The cectionagnet vote.
Shutoff	Idle delivery:
electromagnet Volt: 12	+
	+ 1st speed 1/min: 375
Overlow quantity at overflow valve:	+ Shutoff
1st speed 1/min: 600	electromagnet Volt: 12
Shutoff	Del. quantity cm3/: 12.0016.00 1000S:: (9.0019.00)
electromagnes Volt: 12	+ Dispersion cm3/: 3.0
Overflow : 41.7083.40	10005.: (3.0)
quantity cm3/10s: (26.7098.40)	+ 2nd speed 1/min: 465
2nd speed 1/min: 2100	+ Shutoff
Shutoff	+ electromagnet Volt: 12
electromagnet Volt: 12 Overflow : 55.60139.00	Del. quantity cm3/: 0.003.00
quantity cm3/10s: (40.60153.00)	1000s.: (0.003.00)
TUISTEE CONTRACTOR CON	Load-dependent start of delivery:
Delivery-quant. and breakaway char.:	Injqty.dif.measurement:
,	+
0.1 1 4/1 0/00	+ 1st speed 1/min: 1000
2nd speed 1/min: 2600	+ Charge press. hPa:
Shutoff electromagnet Volt: 12	Injqty. cm3/ : -16.018.0 difference 1000S.: (-16.018.0)
TO A SECURITION OF THE CONTRACT OF THE CONTRAC	GITTE CONTRACTOR AND A CONTRACTOR AND

Shutoff Shutoff electromagnet: electromagnet Volt: 12 3rd speed 1/min: 1000 Cut-in Charge press. hPa: # min voltage : 10.0 cm3/: -15.0...-21.0 Inj. aty. Rated voltage : 12.0 difference 1000s.: (-14.0...-22.0) Shutoff Mounting and assembly dimensions: electromagnet Volt: 12 1/min: 1000 5th speed Designation Charge press. hPa: * K mm: -Inj.-qty. cm3/: 0.00...2.00 KF mm: 5.8...6.2 difference 1000S .: (0.00 ... 2.00) MS mm: 1.7...2.1 Shutoff SVS max. mm: electromagnet Volt: 12 Ya mm: 37.9...39.9 mm: 41.8...47.0 TD-travel dif.measurement: correttore anticipo iniezione (SV): Remarks: 1/min: 1000 1st speed Charge press. hPa: # TD-travel : -0.40...-0.60 Overflow restriction 0.55 mm - Part No. difference mm: (-0.40...-0.60) Shutoff electromagnet Volt: 12 Ya = Distance between VE flange and 3rd speed 1/min: 1000 Charge press. hPa: * speed-control lever in idle : -0.40...-1.40 TD-travel difference mm: (-0.40...-1.40)position Shutoff electromagnet Volt: 12 Yb = Distance between VE flange and SP press.-dif.measurement: speed-control lever in rated speed pompa di mandata (FP): 1st speed 1/min: 1000 position Charge press. hPa: ' Supply pump-Measurement point = edge of control : -0.10...-0.30 pressure bar: (-0.10...-0.30) difference lever on distributor-head end Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: 1/min: 300 1st speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 55.00...85.00 1000s.: (55.00...85.00) 1/min: 500 2nd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 25.00...45.00 1000s.: (25.00...45.00) 1/min: 100 4th speed Shutoff electromagnet Volt: 12

Del. quantity cm3/: 65.00...105.00

1000s.: (65.00...105.00)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test scheet : SOF Edition : 07.93

replaces : -

Calibrating oil : ISO-4113

Injection pump : VE4/10F2100R557 Type number : 0 460 404 079

Customer Part-No. :

Customer—specific information Customer : IVECO-SOFIM

Engine : 8140.67.2700

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil return temp. °C

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

assembly : 1 688 901 022

Opening

Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 450

Start of delivery

Prestroke mm: 0.2

(from BDC): +0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000

Setting value mm: 0.90...1.10

Shutoff

electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000

Setting value bar: 4.70...5.30

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500

Del. quantity cm3/

1000s.: 42.50...43.50

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 3.0 1000s.: (3.0)

Low-idle speed regulation

Speed 1/min: 375

Del. quantity cm3/

1000s.: 12.00...16.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.0 1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2300

Del. quantity cm3/

1000s.: 25.00...29.00

Shutoff

electromagnet Volt: 12

Start:

Speed 1/min: 100

Del. quantity cm3/: 65.00...105.00

mind 1000s.: 65.00

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

Speed 1/min: 1000 Charge press hPa: 12

Inj.-qty. cm3/

difference 1000s.: -15.0...-21.00#

Shutoff

electromagnet Volt: 12 TD-travel dif.measurement

correttore anticipo iniezione (SV)

1. Speed 1/min: 1000

TD-travel

difference mm: -0.4...-0.60#

Shutoff

electromagnet Volt: 12

Inspection—pump test specifications Test specifications in parentheses

Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) 5th speed 1/min: 2300 Timing-device characteristic: 1st speed 1/min: 1800 Shutoff mm: 6.10...6.70 mm: (5.70...7.10) TD travel electromagnet Volt: 12 1/min: 1000 3rd speed TD travel mm: 0.90...1.10 Shutoff mm: (0.40...1.60) electromagnet Volt: 12 Del. quantity cm3/: 42.00...45.00 1000s.: (41.00...46.00) Shutoff electromagnet Volt: 12 5th speed 1/min: 2100 1/min: 1500 12th speed mm: 6.90...7.70 TD travel Shutoff mm: (6.60...3.90) electromagnet Volt: 12 Del. quyntity cm3/: 42.50...43.50 1000S.: (41.00...45.00) Shutoff electromagnet Volt: 12 1/min: 1500 6th speed 15th speed 1/min: 1000 mm: 4.20...4.80 TD travel Shutoff electromagnet Volt: 12
Del. quantity cm3/: 39.50...42.50
1000s.: (38.50...43.50) mm: (3.80...5.20) Shutoff electromagnet Volt: 12 20th speed 1/min: 600 Supply-pump pressure characteristic: Shutoff electromagnet Volt: 12 Del. quantity cm3/: 34.50...38.50 1000s.: (33.50...39.50) 1st speed 1/min: 2100 Supply-pump pressure bar: 8.50...9.10 Shutoff Mech. shutoff: electromagnet Volt: 12 1/min: 1000 2nd speed Electr. shutoff: Supply-pump bar: 4.70...5.30 pressure 1st speed 1/min: 375 Del. quantity cm3/: 0.00...3.00 Shutoff electromagnet Volt: 12 1000s.: (0.00...3.00) 1/min: 600 3rd speed Shutoff Supply-pump electromagnet volt: ~ bar: 3.20...3,80 pressure Shutoff Idle delivery: electromagnet Volt: 12 1st speed 1/min: 375 Overlow quantity at overflow valve: Shutoff electromagnet Volt: 12 Del. quantity cm3/: 12.00...16.00 1000s.: (9.00...19.00) 1st speed 1/min: 600 Shutoff cm3/: 3.0 1000s.: (3.0) electromagnet Volt: 12 Dispersion : 41.70...83.40 cm3/10s: (26.70...98.40) quantity 1/min: 465 2nd speed 2nd speed 1/min: 2100 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Shutoff electromagnet Volt: 12 : 55.60...139.00 Overflow cm3/10s: (40.60...153.00) quantity Load-dependent start of delivery: Delivery-quant. and breakaway char.: Inj.-qty.dif.measurement: 1st speed 1/min: 1000 1/min: 2600 2nd speed Charge press. hPa: ' Inj.-qty. cm3/ : -16.0...-18.0 Shutoff electromagnet Volt: 12 difference 1000s.: (-16.0...-18.0)

Shutoff Shutoff electromagnet: electromagnet Volt: 12 3rd speed 1/min: 1000 Cut-in Charge press. hPa: # min voltage : 10.0 Inj.-qty. cm3/: -15.0...-21.0 difference 1000s.: (-14.0...-22.0) Rated voltage : 12.0 Shutoff Mounting and assembly dimensions: electromagnet Volt: 12 1/min: 1000 5th speed Designation Charge press. hPa: * mm: cm3/: 0.00...2.00 KF Ini.-aty. mm: 5.6...6.0 difference 1000s.: (0.00...2.00) MS mm: 1.7...1.9 Shutoff SVS max. mm: mm: 37.9...39.9 electromagnet Volt: 12 Ya mm: 41.8...47.0 Yb TD-travel dif.measurement: correttore anticipo iniezione (SV): 1st speed 1/min: 1000 Remarks: Charge press. hPa: # : -0.40...-0.60 TD-travel Overflow restriction 0.55 mm - Part No. difference mm: (-0.40...-0.60)Shutoff electromagnet Volt: 12 Ya = Distance between VE flange and 3rd speed 1/min: 1000 Charge press. hPa: * speed-control lever in idle TD-travel : -0.40...-1.40 difference mm: (-0.40...-1.40)position Shutoff electromagnet Volt: 12 Yb = Distance between VE flange and SP press.-dif.measurement: speed-control lever in rated speed pompa di mandata (FP): 1st speed 1/min: 1000 position Charge press. hPa: ' Supply pump-Measurement point = edge of control : -0.10...-0.30 bar: (-0.10...-0.30) pressure difference lever on distributor-head end Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: 1st speed 1/min: 300 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 55.00...85.00 1000s.: (55.00...85.00) 2nd speed 1/min: 500 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 25.00...45.00 1000s.: (25.00...45.00) 4th speed 1/min: 100 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 65.00...105.00 1000s.: (65.00...105.00)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test scheet : VWW Edition : 07.92

replaces

Calibrating oil : ISO-4113

Injection pump : VE6/10F2150L470 : 0 460 406 073 Type number

Customer Part-No. :

Customer-specific information

Customer

Engine : 075.2 (2.41.)

TEST BENCH REQUIREMENTS

Overflow restricti: 1 469 456 303

Calibrating oil °C return temp.

with thermometer : 40.00...48.00 : 42.00...50.00 Electronically

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 000 assembly

Openina |

Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 x Lenath mm: 840

Start of delivery Prestroke mm: -(from BDC): -

Injection pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1250 Charge press. hPa: 750

Setting value mm: 2.20...2.60

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1250 Speed Charge press hPa: 750 Setting value bar: 5.20...5.80

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1250 Charge press. hPa: 750

Del. quantity cm3/

1000s.: 41.50...42.50

Shutoff

electromagnet Volt: 12 cm3/: 2.5 Dispersion

1000s.: (3.0)

Full-load del. w/out charge press.:

1/min: 600 Speed

Del. quantity cm3/

1000s.: 24.50...25.50

Shutoff

electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 375

Del. quantity cm3/ 1000s.: 7.00...9.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 2.0

1000s.: (3.0)

Full-load speed regulation

1/min: 2250 Speed hPa: 750 Charge press

Del. quantity cm3/

1000s.: 10.00...14.00

Shutoff

electromagnet Volt: 12

Start:

Speed 1/min: 100

Del. quantity cm3/: 35.00...65.00

~1000s.: 35.00 mind

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

Speed 1/min: 1250

cm3/Inj.-qty.

difference 1000s.: -1.00...-5.00 +

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Shutoff		+	Shutoff	
electromagnet Volt:	12	+	electromagnet Volt:	12
TD-travel dif.measu	rement	+	Overflow :	41.7083.40
correttore anticipo	iniezione (SV)	+	quantity cm3/10s:	
1.Speed 1/min:	1250	+	2nd speed 1/min:	
TD-travel		+	Charge press. hPa:	750
difference mm:	-0.60.80÷	+	Shutoff	
Shutoff		+	electromagnet Volt:	12
electromagnet Volt:	12	+	Overflow :	55.60138.90
•		+	Overflow : quantity cm3/10s:	(41.70152.90)
Inspection-pump tes	t specifications	+	40	
Test specifications		+	Delivery-quant. and	breakaway char.:
		+		
Timing-device chara	cteristic:	+	And - A A	750.
2nd amand 1/min.	1400	†	1nd speed 1/min:	
2nd speed 1/min:		†	Charge-air pressure	
Charge press hPa:	/ DU / DD	†	point hPa:	350
	4.004.80	+	Shutoff	
	(3.705.10)	+	electromagnet Volt:	12
Shutoff		+	Del. quantity cm3/:	34.0035.00
electromagnet Volt:	12	+	1000s.:	(31.5037.50)
3rd speed 1/min:		+	2nd speed 1/min:	
Charge press hPa:		+	Charge press. hPa:	750
TD travel mm:		+	Shutoff	
mm:	(1.703.10)	+	electromagnet Volt:	12
Shutoff		+	Del. quantity cm3/:	
electromagnet Volt:	12	+		(0.006.00)
4th speed 1/min:		+	5th speed 1/min:	
Charge press hPa:		1	Charge press. hPa:	
TD travel mm:	0.601.40	1	Shutoff	130
	(0.301.70)	1	electromagnet Volt:	12
Shutoff	(5.55.1,1),	1	Del. quantity cm3/:	10 00 14 00
electromagnet Volt:	12	1		(8.0016.00)
	16	1	8th speed 1/min:	
Supply-pump pressure	e characteristic	1	Charge press. hPa:	
cappe) parity pressure	e character racte.	1	Shutoff	7 70
1st speed 1/min:	600	1	electromagnet Volt:	12
Charge press. hPa:		Ι	Del. quantity cm3/:	
Supply-pump	100	Ι		
pressure bar:	3.303.90	T		(18.0030.00)
Shutoff	3.303.90	T	9th speed 1/min:	
electromagnet Volt:	12	T	Charge press. hPa:	750
2nd speed 1/min:		T	Shutoff	10
Charge press. hPa:		T	electromagnet Volt:	
	730	1	Del. quantity cm3/:	
Supply-pump	F 20 F 90	†		(33.4037.80)
	5.205.80	†	10th speed 1/min:	
Shutoff	45	†	Charge press. hPa:	750
electromagnet Volt:		†	Shutoff	40
3rd speed 1/min:		†	electromagnet Volt:	
Charge press. hPa:	750	†	Del. quantity cm3/:	36.6038.60
Supply-pump	7.50	†		(35.4039.80)
	7.508.10	+	12th speed 1/min:	
Shutoff	40	+	Charge press. hPa:	750
electromagnet Volt:	12	+	Shutoff Shutoff	
-		+	electromagnet Volt:	
Overlow quantity at	overflow valve:	+	Del. quyntity cm3/:	
		+		(39.8044.20)
1st speed 1/min:		+	18th speed 1/min:	
Charge press. hPa:	-	+	Charge press. hPa:	-

Shutoff	+ Shutoff
electromagnet Volt: 12	+ electromagnet Volt: 12
Del. quantity cm3/: 24.5025.50	- 3rd speed 1/min: 1250
1000s.: (22.0028.00)	+ TD-travel : -1.11.50*
20th speed 1/min: 600	+ difference mm: (-0.801.80)
Charge press. hPa: 750	- Shutoff
Shutoff	
	+ electromagnet Volt: 12
electromagnet Volt: 12	† an
Del. quantity cm3/: 37.7040.70	+ SP pressdif.measurement:
1 000 \$.: (36.2042.20)	pompa d'i mandata (FP):
	+ 1st speed 1/min: 1250
Mech. shutoff:	+ Supply pump-
Electr. shutoff:	+ pressure : -0.10.30' + difference bar: (-0.100.30)
	+ Shutoff
1st speed 1/min: 375	+ electromagnet Volt: 12
Del. quantity cm3/: 0.003.00	
	+ 3rd speed 1/min: 1250
1000s.: (0.003.00)	+ Supply pump-
Shutoff	+ pressure : -0.50.90*
electromagnet volt: -	+ difference bar: (-0.301.10)
-	+ Shutoff
Idle delivery:	+ electromagnet Volt: 12
	+ 4th speed 1/min: 1250
1st speed 1/min: 375	The speed with 1250
Shutoff	T Assamption assume for a dult and
	+ Automatic starting fuel delivery:
electromagnet Volt: 12	
Del. quantity cm3/: 7.009.00	+ 1st speed 1/min: 320
1000s.: (4.0012.00)	+ Shutoff
Dispersion cm3/: 2.0	+ electromagnet Volt: 12
1000s.: (3.0)	- Del. quantity cm3/: 35.0075.00
2nd speed 1/min: 500	10008: (35.0075.00)
Shutoff	11,005;. (53,0075.00)
electromagnet Volt: 12	7 2nd annual 1/min. 500
	+ 2nd speed 1/min: 520
Del. quantity cm3/: 0.004.00	+ Shutoff
1000s.: (0.004.00)	+ electromagnet Volt: 12
	+ Del. quantity cm3/: 15.0035.00
Load-dependent start of delivery:	+ 1000s.: (15.0035.60)
<pre>Injqty.dif.measurement:</pre>	}
- · · ·	+ 4th speed 1/min: 100
1st speed 1/min: 1250	+ Shutoff
Injqty. cm3/ : $-0.51.50$ '	+ electromagnet Volt: 12
difference 1000s.: (-0.501.50)	9el. quantity cm3/: 35.9065.00
Shutoff	
	† 1000s.: (35.0065.00)
electromagnet Volt: 12	
3rd speed 1/min: 1250	+ Shutoff electromagnet:
Injqty. cm3/: -1.05.00+	+
difference 1000\$.: (1.007.00)	∔ Cut−in
Shutoff	+ min voltage : 10.0
electromagnet Volt: 12	+ Rated voltage : 12.0
5th speed 1/min: 1250	1 Hatta voctage . 12.0
	Mountains and associate discussions
Injqty. cm3/: 0.003.00 *	† Mounting and assembly dimensions:
difference 1000s.: (0.003.00)	†
Shutoff	+ Designation
electromagnet Volt: 12	+ K mm: 3.33.5
	+ KF mm: 6.56.7
TD-travel dif.measurement:	+ MS mm: 1.11.5
correttore anticipo iniezione (SV):	+ SVS max. am: -
1st speed 1/min: 1250	Ya mm: 31.533.5
TD-travel : -0.60.80+	
difference (0 (0 B 00)	+ Yb mm: 51.063.3
difference mm: (-0.600.80)	†

Remarks:

Ya = Distance between VE flange and speed-control lever in idle position

Yb = Distance between VE flange and speed-control lever in rated speed position

Measurement point = edge of control lever on distributor-head end

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut

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BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test scheet : VWW Edition : 07.93

replaces

Calibrating oil : ISO-4113

Injection pump : VE6/10F2150L398 Type number : 0 460 406 075

Customer Part-No. :

Customer-specific information

Customer

Engine : 075.1 (2.4L)

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 000 assembly

Opening |

bar: 147.00...150.00 Pressure

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 840

Start of delivery Prestroke mm: -(from BDC): -

Injection pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1500 Speed

Setting value mm: 4.40...4.80

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1500 Speed

Setting value bar: 6.00...6.60

Shutoff

electromagner Voit: 12

Full-load del. with charge press.:

1/min: 1250

Del. quantity cm3/

1000s.: 30.00...31.00

Shutoff

electromagnet Volt: 12 cm3/: 2.5 Dispersion 1000s.: (3.0)

Low-idle speed regulation

Speed 1/min: 375

Del. quantity cm3/ 10003.: 7.08...9.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 2.0 1000s.: (3.0)

Full-load speed regulation

1/min: 2325 Speed

Del. quantity cm3/

1000s.: 10.00...14.00

Shutoff

electromagnet Volt: 12

Start:

1/min: 100 Speed

Del. quantity cm3/: 35.00...65.00

1000s.: 35.00 mind

Shutoff

electromagnet Volt: 12

Load dependent start of delivery:

Inj.-qty.dif.measurement:

Speed 1/min: 1500

Inj.-qty. cm3/

difference 1000s.: -8.00...-12.00#

Shutoff

electromagnet Volt: 12 TD-travel dif.measurement

correttore anticipo iniezione (SV)

1/min: 1500 1.Speed

TD-travel

difference mm: -0.6...-0.80#

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device charac	cteristic:	Del. quantity cm3/: 0.003.00 1000S.: (0.003.00)
2nd speed 1/min:	1700 +	5th speed 1/min: 2325
	5.105.90	Shutoff
	(4.806.20)	electromagnet Volt: 12
Shutoff	†	Del. quantity cm3/: 10.0014.00
electromagnet Volt:	12 +	1000s.: (8.0016.00)
3rd speed 1/min:		8th speed 1/min: 2275
	4.404.80	Shutoff
	(3.905.30) +	electromagnet Volt: 12
Shutoff	+	Del. quantity cm3/: 14.5024.50
electromagnet Volt:	12 +	1 000 s.: (13.5025.50)
4th speed 1/min:		9th speed 1/min: 2150
	1.802.60	Shutoff
	(1.502.90)	electromagnet Volt: 12
Shutoff	+	Del. quantity cm3/: 21.0023.00
electromagnet Volt:	12	1000s.: (19.8024.20)
5th speed 1/min:		
To Americal		
	6.207.00	Shutoff
	(5.907.30)	electromagnet Volt: 12
Shutoff	+	Del. quantity cm3/: 22.7025.30
electromagnet Volt:	12	1000s.: (21.0027.00)
ecces onagine vote.	T	
5	.	12th speed
Supply-pump pressure	e characteristic:	Shutoff
	↓ ~	electromagnet Volt: 12
1st speed 1/min:	750	Del. quynticy cm3/: 30.0031.00
Supply-pump	130	
anthra-baith	700 / 10	10005.: (28.2032.70)
	3.804.40	20th speed 1/min: 750
Shutoff	+	Shutoff
electromagnet Volt:	12 1	electromagnet Volt: 12
2nd speed 1/min:		Del. quantity cm3/: 26.5029.50
	7	40000 (20.0027.00)
Supply-pump	t	1000s.: (25.0031.00)
	6.006.60	
Shutoff	+	Mech. shutoff:
electromagnet Volt:	12	
3rd speed 1/min:		Clarks shows &C.
	Z13U T	Electr. shutoff:
Supply-pump	<u>+</u>	
oressure bar:	7.908.50	1st speed 1/min: 375
Shutoff	1	Del. quantity cm3/: 0.003.00
electromagnet Volt:	12	10008.: (0.003.00)
ececci onagriec voct.	'E	
		Shutoff
Overlow quantity at	overflow valve:	electromagnet volt: -
	+	•
1st speed 1/min:	750 1	Idle delivery:
Shutoff	, 30	Idea delivery.
	12	A
electromagnet Volt:		1st speed 1/min: 375
Overflow :	41.7083.40	Shutoff
quantity cm3/10s:	(27.8097.30)	electromagnet Volt: 12
2nd speed 1/min:		No. 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1
	2130	Del. quantity cm3/: 7.009.00
Shutoff	+	1000§.: (4.0012.00)
electromagnet Volt:	12 +	Dispersion cm3/: 2.0
	55.60138.90	1000s.: (3.0)
quantity cm3/10s:		2nd speed 1/min: 500
quarterly (1827-193).	7	
S=1.4	, , , †	Shutoff
Delivery-quant. and	breakaway char.: +	electromagnet Volt: 12
	+	Del. quantity cm3/: 0.003.00
	1	1000s.: (0.003.00)
2nd speed 1/min:	2500	(000011 (0100111)
Shutoff	T	المار في المار العام المار الم
	1	Load-dependent start of delivery:
electromagnet Volt.	1/	Ini -aty dif mascurement:

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1/min: 500 2nd speed Shutoff 1st speed 1/min: 1500 Charge press. hPa: 1 Irij.-qty. cm3/: -6.50...-8.50 difference 1000s.: (-6.50...-8.50) electromagnet Volt: 12 Del. quantity cm3/: 15.00...35.00 1000s.: (15.00...35.00) Shutoff electromagnet Volt: 12 3rd speed 1/min: 1500 1/min: 100 4th speed Shutoff Charge press. hPa: # electromagnet Volt: 12 Del. quantity cm3/: 35.00...65.00 cm3/: -8.0...-12.00 Inj.-qty. difference 1000s.: (-6.0...-14.00) 1000s.: (35.00...65.00) Shutoff electromagnet Volt: 12 5th speed 1/min: 1500 Shutoff electromagnet: Charge press. hPa: * Cut-in cm3/: 0.00...3.00 Inj. gty. min voltage : 10.0 difference 1000s.: (0.00...3.00) Rated voltage : 12.0 Shutoff electromagnet Volt: 12 Mounting and assembly dimensions: TD-travel dif.measurement: Designation correttore anticipo injezione (SV): mm: 3.2...3.4 K mm: 6.3...6.7 1st speed 1/min: 1500 KF Charge press. hPa: # mm: 1.3...1.7 MS TD-travel mm: 31 5... 33.5 mm: 51.2...63.4 : -0.60...-0.80 Ya difference mm: (-0.60...-0.20) Yh Shutoff electromagnet Volt: 12 3rd speed 1/min: 1500 Remarks: Charge press. hPa: * : -1.10...-1.50 TD-travel Overflow restriction 0.55 mm - Part No. difference mm: (-0.80...-1.80)...303 Shutoff electromagnet Volt: 12 Ya = Distance between VE flange and SP press.—dif measurement: speed-control lever in idle pompa di mandata (FP): 1/min: 1500 1st speed position Charge press. hPa: ' Supply pump-Yb = Distance between VE flange and pressure : -0.10...-0.30 difference bar: (-0.20...-0.20) speed-control lever in rated speed Shutoff electromagnet Volt: 12 position 1/min: 1500 3rd speed Charge press. hPa: * Measurement point = edge of control Supply pump-: -0.50...-0.90 pressure lever on distributor-head end bar: (-0.30...-1.10) difference Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: 1st speed 1/min: 300 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 35.00...75.00 1000s.: (35.00...75.00)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test scheet : FOR 2,5 Edition : 07.07.93 replaces : 16.02.91 Calibrating oil : ISO-4113

Injection pump : VE4/11F2000R415 Type number : 0 460 414 083

Customer Part-No. :

Customer-specific information Customer : FORD

(1)=NLK

Engine : 2.51 DI(2) = OHNE NLK

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil return temp.

with thermometer : 44.00...46.00 Electronically : 44.00...46.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 114 assembly

Opening

Pressure bar: 207.00...210.00

Perforated-plate

diameter mm: 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 450

Start of delivery block mm: 0.35 Piston stroke

mm: 0.30...0.40

Outlet : B

Injection-pump setting values Test specifications in parentheses

Timing device travel

1/min: 1250 Speed

Setting value mm: 4.20...4.60

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1250 Speed

Setting value bar: 6.90..7.50(1)

Shutoff

electromagnet Volt: 12

Full-load del. w/out charge press.:

1/min: 500 Speed

Del. quantity cm3/

1000s.: 25.80...26.20 F

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 3.0 1000s.: (4.0)

Low-idle speed regulation

Speed 1/min: 425

Del. quantity cm3/

1000s.: 6.00...8.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.0 1000s.: (4.0)

Full-load speed regulation

1/min: 2200 Speed

Del. quantity cm3/

1000s.: 23.20...25.20

Shutoff

electromagne: Volt: 12 cm3/: 3.0Dispersion 1000s.: (4.0)

Start:

Speed 1/min: 100

Del. quantity cm3/: 45.00...85.00

1000s.: 45.00

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing device characteristic:

1st speed 1/min: 2000 Charge press

hPa: (1) mm: 7.40...8.20 TD travel

mm: (7.10...8.60)

electromagnet Volt: 12 2nd speed 1/min: 1250 Charge press hPa: (1)

	4.204.60	+	Shutoff
	(3.904.90)	+	electromagnet Volt: 12
Shutoff		+	Overflow : 97.30141.70
electromagnet Volt:	12	+	quantity cm3/10s: (82.30156.70)
3rd speed 1/min:		+	2nd speed 1/min: 1950
Charge press hPa:		1	Shutoff
TD travel mm:	1.702.50	1	electromagnet Volt: 12
	(1.402.80)	1	Overflow : 115.30184.80
Shutoff	(11)	1	quantity cm3/10s: (100.30199.30)
electromagnet Volt:	12	1	quarterly 61107 703. (1907501.1177.00)
4th speed 1/min:		Ţ	Delivery-quant. and breakaway char.:
Charge press hPa:		1	becively quality and breakaway char.,
TD travel mm:	7 50 8 30	I	
	(7.208.60)	I	1nd speed 1/min: 1950
Shutoff	(7.200.00)	T	Shutoff
electromagnet Volt:	12	T	
		T	electromagnet Volt: 12
		†	Del. quantity cm3/: 36.0038.40 D
Charge press. hPa:		†	1000s.: (34.7039.70) t
	4.204.60	+	2nd speed 1/min: 2400
	(3.904.90)	+	Shutoff
Shutoff		+	electromagnet Volt: 12
electromagnet Volt:		+	Del. quantity cm3/: 0.005.00
6th speed 1/min:		+	1000s.: -
Charge press. hPa:		+	5th speed 1/min: 2200
	2.002.80	·}-	Shutoff
	(1.703.10)	+	electromagnet Volt: 12
Shutoff		4-	Del. quantity cm3/: 23.2025.20
electromagnet Volt:	12	+	10005.: (19.2029.20)
3		+	8th speed 1/min: 2100
Supply-pump pressur	e characteristic:	1	Shutoff
table of bench by cooper		į.	electromagnet Volt: 12
1st speed 1/min:	500	Ţ	Del. quantity cm3/: 30.5036.50
Supply-pump	300	1	1000s.: (27.5039.50)
	(1) 5.25.8	Ι	9th speed 1/min: 1950
	(2) 4.45.0	\mathbf{I}	Shutoff
Shutoff Shutoff	(1) 4.4.15.0	Ţ	electromagnet Volt: 12
electromagnet Volt:	12	T	Del. quantity cm3/: 36.0038.40
2nd speed 1/min:		T	
Supply-pump	1000	T	1000s.: (34.7039.70)
and the point	(1) 6.47.0	T	10th speed 1/min: 1700
		Ť	Shutoff
	(2) 5.76.3	†	electromagnet Volt: 12
Shutoff	42	†	Del. quantity cm3/: 36.5038.90 1000s.: (35.2040.20)
electromagnet Volt:		†	1000S.: (35.2040.20)
3rd speed 1/min:	1250	+	11th speed 1/min: 1000
Supply-pump		+	Del. quantity cm3/: 32.2033.20 E
	(1) 6.97.5	+	1000s.: (30.2035.20) E
	(2) 6.26.8	+	12th speed 1/min: 500
Shutoff		+	Shutoff
electromagnet Volt:	12	+	electromagnet Volt: 12
4th speed 1/min:	2000	+	Del. quyntity cm3/: 25.8026.20 F
Supply-pump		+	1000s.: (23.0029.00) F
pressure bar:	(1) 8.69.2	+	
bar:	(2) 7.88.4	+	Mech. shutoff:
Shutoff		1	
electromagnet Volt:	12	1	Electr. shutoff:
		1	
Overlow quantity at	overflow valve:	1	1st speed 1/min: 425
and the second second second second	and the second s	1	Del. quantity cm3/: 0.003.00
1st speed 1/min:	500	1	10000 (0.003.00)

Shutoff mm: 2.7...2.9 K KF electromagnet volt: mm: K-OT MS mm: 1.8 Idle delivery: TLA-E mm: 2.5 mm: 42.8...45.8 Ya 1/min: 425 1st speed Yb mm: 60.0...72.0 Shutoff electromagnet Volt: 12 Remarks: Del. quantity cm3/: 6.00...8.00 1000s.: (3.00...11.00) cm3/: 3.0Dispersion 1000s.: (4.0) 1/min: 500 2nd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: (1) 0.0...6.0 1000s.: (2) 2.0...10.0 Part-load del.at 3rd inj.-gty. terza fermo della portata stop (EGR set) scarico) (ARF) gaz d'échappement-ARF) mm: 20.0 Spacing 1/min: 1250 1st speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 18.00...19.00 1**000**\$.: (16.00...21.00) Automatic starting fuel delivery: 1st speed 1/min: 300 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 40.00...70.00 1**000**s.: (40.00...70.00) 1/min: 420 2nd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 21.00...31.00 1000s.: (21.00...31.00) 4th speed 1/min: 100 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 45.00...85.00 1000s.: (45.00...85.00) Shutoff electromagnet: Cut-in : 10.0 min voltage : 12.0 Rated voltage Mounting and assembly dimensions: Designation

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Pump/engine assignment: Attach timing-device cover KDEP 1151. Plunger lift in blocking position = 0.30... 0.40 mm referenced to outlet "B".

Ya = Distance between VE flange and speed-control lever in idle position

Yb = Distance between VE flange and speed-control lever in rated speed position

Measurement point = edge of control lever on distributor-head end

F = Adjustment point for low full-load delivery
E = Fuel-delivery adjustment point in HBA range. (Correction by way of HBA adjusting screw).
D = Adjustment point for high full-load delivery

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

: MAN Test scheet Edition : 07.93

replaces

Calibrating oil : ISO-4113

: VE6/11F1350R417-4 Injection pump Type number : 0 460 416 074

Customer Part-No. :

Customer—specific information

Customer

: D 0826 GF 04 Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder

assembly : 1 688 901 109

Opening

Pressure bar: 207.00...210.00

Perforated plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 840

Start of delivery

Prestroke mm: 0.61

(from BDC): +-0.02(0.04)

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1100

Setting value mm: 2.00...2.40

Shutoff

electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1100

Setting value bar: 5.90...6.50

Shutoff

electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 1000

Del. quantity cm3/

1000s.: 83.00...84.00

Shutoff

electromagnet Volt: 24 Dispersion cm3/: 4.0 1000S.: (4.5)

Low-idle speed regulation

1/min: 300 Speed

Del. quantity cm3/

1000s.: 7.00...13.00

Shutoff

electromagne: Volt: 24 Del. quantity cm3/: 6.0 1000s.: (6.5)

Full-load speed regulation

Speed 1/min: 1410

Del. quantity cm3/

1000s.: 57.00...63.00

Shutoff

electromagnet Volt: 24

Start:

Speed 1/min: 100 Del. quantity cm3/: -1000s.: 57.00 mind

Shutoff

electromagnet Volt: 24

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 1200 2nd speed

mm: 2.80...3.60 TD travel mm: (2.50...3.90)

Shutoff

electromagnet Volt: 24 3rd speed

1/min: 1100 mm: 2.00...2.40 TD travel

mm: (1.50...2,90)

Shutoff

electromagnet Volt: 24 1/min: 1000 4th speed

TD travel nm: 0.80	
mm: (0.50	
Shutoff	+ Del. quantity cm3/: 57.0063.00
electromagnet Volt: 24	† 1000s.: (55.5064.50)
5th speed 1/min: 1350	+ 9th speed 1/min: 1350
TD travel mm: 3.70	
mm: (3.70	
Shutoff	+ Del. quantity cm3/: 77.5080.50
electromagnet Volt: 24	1000\$.: (76.0082.00)
Supply-pump pressure charac	+ 12th speed 1/min: 1100 teristic: + Shutoff
supply pump pressure charac	+ electromagnet Volt: 24
1st speed 1/min: 600	Del. quyntity cm3/: 81.5082.50
Supply-pump	10008:: (79.5084.50)
pressure bar: 2.80	3.40 + 15th speed 1/min: 850
Shutoff	+ Shutoff
electromagnet Volt: 24	+ electromagnet Volt: 24
2nd speed 1/min: 1100	Del. quantity cm3/: 81.0085.00
Supply-pump	+ 1000s.: (79.5086.50)
pressure bar: 5.90	6.50 + 20th speed 1/min: 600
Shutoff	+ Shutoff
electromagnet Volt: 24	electromagnet Volt: 24
3rd speed 1/min: 1350	+ Del. quantity cm3/: 57.0063.00
Supply-pump	1000s.: (56.0064.00)
pressure bar: 7.40	
Shutoff	+ Mech. shutoff:
electromagnet Volt: 24	+ Mech. Abstellung:
Chronia, augustātu, at augusti	4
Overlow quantity at overflo	
1st speed 1/min: 600	pel. quantity cm3/: 0.003.00
Shutoff	1000s.: (0.003.00) + Shutoff
electromagnet Volt: 24	
Overflow : 41.70.	electromagnet volt: 24
quantity cm3/10s: (26.70.	98.40) = Electr. shutoff:
2nd speed 1/min: 1350	1 2000011.
Shutoff	1st speed 1/min: 300
electromagnet Volt: 24	Del. quantity cm3/: 0.003.00
Overflow : 55.60	.139.00 ± 1000s.: (0.003.00)
quantity cm3/10s: (40.60.	153.00) + Shutoff
,	electromagnet volt: -
Delivery-quant. and breakaw	ay char.: \downarrow
	Idle delivery:
m	†
2nd speed 1/min: 1550	+ 1st speed 1/min: 300
Shutoff	+ Shutoff
electromagnet Volt: 24	electromagnet Volt: 24
Del. quantity cm3/: 0.00	
1000s.: (0.00	
3rd speed 1/min: 1500 Shutoff	Dispersion cm3/: 6.0
	1000s.: (6.5)
electromagnet Volt: 24 Del. quantity cm3/: 0.00	+ 2nd speed 1/min: 450 15.00 + Shutoff
1000s.: (0.00	.15.00) + electromagnet Volt: 24
4th speed 1/min: 1450	+ Del. quantity cm3/: 0.003.00
Shutoff	1000s;: (0.003.00)
electromagnet Volt: 24	10000,. (0.00,)
Del. quantity cm3/: 15.00	.45.00 Automatic starting fuel delivery:
1000s.: (15.00.	45.00)
5th speed 1/min: 1410	1st speed 1/min: 300
	•

Shutoff

electromagnet Volt: 24

Del. quantity cm3/: 65.00...125.00 1000s.: (65.00...125.00)

2nd speed 1/min: 480 Shutoff

electromagnet Volt: 24

Del. quantity cm3/: 40.00...70.00

1000s.: (40.00...70.00)

3rd speed 1/min: 100

Shutoff

electromagnet Volt: 24

Del. quantity cm3/: 64.00...66.00 1000s.: (57.00...73.00)

Shutoff electromagnet:

Cut-in

min voltage : 20.0 Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

mm: -

KF mm: 5.3...5.5 MS

mm: mm: 0.6 SVS max.

Ya mm: 37.4...40.4

Yb mm: 40.2...45.8

Remarks:

: MAN 51.1110 3-7215

Permissible port/port scatter with stop test, mechanical = max. 5.0 ccm/1000 S.

Permissible port/port scatter with stop test, electrical = max. 5.0 ccm/1000 S.

Ya = Distance between VE flange and

speed-control lever in idle

position

Yb = Distance between VE flange and

speed-control lever in rated speed

position

Measurement point = edge of control

lever on distributor-head end

Overflow restriction 0.55 mm - Part No. ..303